The Fermi Surface of Tin

S/056/60/039/005/005/051
B029/B077

along the binary axes [100] and [010]. Detailed statements are supplemented by illustrating the transformation in stereographic projections along the direction of the magnetic field. The second part of this paper deals with determining the directions of plane sections of an open Fermi surface. There are several types of current diagrams with $\varrho_{\vec{H}} = \text{const}(\alpha)$, where α denotes the angle formed by the current and the open cross section or a certain crystallographic axis ($\vec{j} \perp \vec{H}$). Using these polar diagrams of the current intensity it is possible to determine whether the cause of the quadratic increase of resistance for a given direction of the magnetic field is the compensation of volumes ($V_1 = V_2$) or the presence of open trajectories, and it is possible to determine the direction of these trajectories. Two special cases are then investigated. The experimental results are given and discussed in the third part of this paper. Tin was produced by zone melting at the tekhnologicheskiy otdel IFP AN SSSR (Institute of Physical Problems of the AS USSR, Department of Technology). The resistance diagrams of all tin specimens whose axes enclose a small angle with the axis [001] ($0^\circ < \vartheta' \leq 30^\circ$) have the form of eight-leafed rosettes. If this angle

The Fermi Surface of Tin

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is increased, new and very small minima will appear; for these minima no saturation of resistance in the magnetic field was observed either. The polar diagrams for the case $\vartheta' \gtrsim 50^{\circ}$ are two-leafed rosettes. Further details are given. A single Fermi surface cannot explain the current diagrams of the type III. (Such a diagram is obtained by employing the method of volume compensation, $V_1 = V_2$). Tin has also other isoenergetic surfaces, which make it possible to explain such a compensation of volumes. At least two sections of the energy spectrum $\varepsilon(\vec{p})$ are essential to the Fermi surface of tin. The second isoenergetic surface can be closed or open. The two variants of the Fermi surface of tin can be made to agree with the stereographic projection along the main directions of the magnetic field. The open surface represents holes, and the closed one, electrons. The shape of the tubes (the connecting parts between the planes) is very similar to a cylinder. A quadratic increase of resistance is predominant for tin in a magnetic field. The one-leafed characteristic of the Fermi surface could be used to explain the specific features of the galvomagnetic properties of lead, cadmium, zinc, and other metals with open Fermi surfaces.

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86891

The Fermi Surface of Tin

S/056/60/039/005/005/051
B029/B077

Academician P. L. Kapitsa is thanked for his interest. There are 6 figures, 3 tables, and 6 Soviet references.

ASSOCIATION: Institut fizicheskikh problem Akademii nauk SSSR (Institute of Physical Problems, Academy of Sciences USSR)

SUBMITTED: June 17, 1960

Card 4/4

27154
S/056/61/041/002/005/028
B102/B205

24.7000

AUTHORS: Alekseyevskiy, N. Ye., Gaydukhov, Yu. P.

TITLE: The Fermi surface of lead

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 41, no. 2 (8), 1961, 354 - 362

TEXT: An attempt was made to determine the topology of the Fermi surface of lead. Lead was chosen since the de Haas - van Alphen effect has been studied most thoroughly for this metal. This makes it possible to compare the results of two different methods of investigating the Fermi surface. Rod-shaped lead single crystals grown by the method of Chokhral'skiy and plates cut out of single crystals grown by the Obreimov-Shubnikov method were used as specimens. Measurements of resistivity at room and helium temperatures yielded $\rho_{300}/\rho_{4.2}$ = 6000 - 10,000. The measurements themselves were made at 4.2°K in a potentiometer circuit with a sensitivity of 10^{-9} v. The angular dependence of resistivity and of the

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The Fermi surface...

Hall emf was measured in a 25-kOe field. The magnetic field was rotated in a plane perpendicular to the axis of the specimen. The Hall emf was measured both in plates and in round specimens. The results obtained are graphically represented. Fig.1 illustrates some characteristic cases of the angular dependence of resistivity $\rho_H(\vartheta)$, where ϑ is the angle of rotation of the magnetic field. A quadratic increase of resistivity in the magnetic field could be observed within a wide range of angles, whereas saturation was found only under certain conditions, e.g., for $\vec{H} \parallel [110]$ and $\vec{H} \parallel [1\bar{1}2]$ with $\vec{I} \parallel [01\bar{1}]$. The $\rho_H(\vartheta)$ diagram shows narrow, deep minima in these field directions. The type of Fermi surface can be determined from the stereographic projection of the singular directions of the magnetic field. It is a "spatial network of corrugated cylinders", the axes of which are parallel to the direction [111]. This is one of the simplest types which a metal with a cubic lattice can have. An estimate of the diameter of the "cylinders" yields $(0.18 \pm 0.03)b$, where b is the period of the reciprocal lattice in the [001] direction; $b = 2(2\pi/a)$, $a = 4.94$ Å. The mean diameter d_c of the "corrugated cylinders", which form the open Fermi surface of lead,

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B102/B205

The Fermi surface...

can also be estimated from the Hall constant R in the [110] direction. This is done with the use of formulas obtained by I. M. Lifshits and V. G. Peschanskiy (ZhETF, 35, 1951, 1958). One finds $d_c \approx 0.16$ b, from which the volumes of the open surface (0.11 b^3) and of the closed surface (spheres of radius $r \approx 0.3$ b) can be calculated. The Fermi surface in the (110) plane is schematically shown in Fig.6. The results presented here are compared with those obtained by A. V. Gold from the de Haas - van Alphen effect. Gold found three groups of oscillation periods of susceptibility (α, β, γ). The α-type oscillations may be related to the closed "perforated" Fermi surface (short-period oscillations, insignificant anisotropy of the period in all H-directions). The beta and gamma oscillations correspond to the maximum and minimum cross sections of the open Fermi surface (β - weak anisotropy, γ - strong anisotropy). Academician P. L. Kapitsa is thanked for his interest in the work. There are 7 figures, 1 table, and 10 references: 5 Soviet and 5 non-Soviet. The three most important references to English-language publications read as follows: J. R. Klauder, J. E. Kunzler. Phys. Chem. Solids, 18, 256, 1961; A. V. Gold. Phil. Trans. Roy. Soc., 251, 85, 1958; W. A. Harrison. Phys. Rev. 118, 1190, 1960.

Card 3/3

Inst. Physical Problems AS USSR

ALEKSENOVSKIY, N.Ye.; GAYDUKOV, Yu.P.

Fermi surfaces for tin. Zhur.eksp.i teor.fiz. 41 no.4:1079-1081 O '61. (MIRA 14:10)

1. Institut fizicheskikh problem AN SSSR.
(Fermi surfaces)
(Tin)

31766
S/056/61/041/006/005/054
B108/B138

34,7700(1035, 1043, 1164)

AUTHORS: Alekseyevskiy, N. Ye., Kostina, T. I.

TITLE: Change of carrier concentration in bismuth owing to selenium impurities

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 41, no. 6(12), 1961, 1722-1724

TEXT: Bismuth belongs to the group of metals with a closed Fermi surface. Owing to the small number of free carriers (10^{-5} electrons per atom) impurities exert a strong influence on its magnetic and electric properties. The change in carrier concentration due to impurities is of particular interest. 99.998 % pure bismuth was further purified by zone melting. After recrystallization had been repeated 20-30 times the $r_{300°K}/r_{4.2°K}$ ratio was 260. Radioactive selenium was added to the pure specimens to establish an impurity content of $0.5 \cdot 10^{-4}$ (sample Bi-2) and $3.05 \cdot 10^{-4}$ (sample Bi-3). The trigonal sample crystals were 2-2.5 mm thick and 30 mm long. They were prepared according to P. L. Kapitsa (Proc. Roy.

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Change of carrier concentration...

Soc., A119, 358, 1928). Hall constant tends to a saturation value with increasing magnetic field strength. From measurements of Hall constant it was concluded that one selenium atom changes the electron concentration in bismuth by $3 \cdot 10^{-2} \pm 10$ % electrons per atom. The specimens were prepared at the GIREDMET (State Scientific Research Planning Institute of the Rare Metals Industry) by R. A. Dul'kina. There are 2 figures and 9 references. 5 Soviet and 4 non-Soviet. The two most recent references to English-language publications read as follows: J. K. Galt et al. Phys. Rev., 114, 1396, 1959; G. E. Smith. Phys. Rev., 115, 1561, 1959.

4

ASSOCIATION: Institut fizicheskikh problem Akademii nauk SSSR (Institute of Physical Problems of the Academy of Sciences USSR)

SUBMITTED: June 10, 1961

Legend to Fig. 1: (a) $\Delta r/r$ versus magnetic field strength; T = 4.2°K, current parallel to trigonal axis, field parallel to binary axis. curve A - pure Bi, curve B - Bi-Sn. (b) $\Delta r/r$ versus H^2 (abscissa - 10^{-6} H^2, oersted^2) for pure Bi. (1) 10^{-5} H, oersted, (2) 10^{-5} H_{eff}, oersted.

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31776
S/056/61/041/006/022/054
B102/B138

24.3140 (1033, 1072, 1141)

AUTHORS: Alekseyevskiy, N. Ye., Mikhaylov, N. N.

TITLE: Superconducting solenoids of Nb_3Sn for strong magnetic fields

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 41, no. 6(12), 1961, 1809-1810

TEXT: Nb_3Sn with critical temperature 18.06°K was used to make short-circuited coils of 20 to 112 windings. The internal field H_x was studied as dependent on the external field H_0. The $J_{crit}(H)$-curve was typical of a superconducting alloy. For zero field, $J_{crit} \approx 1800$ a, which corresponds to the critical current field at a superconductor surface of ~24 koe, found by Alekseyevskiy (ZhETF, 8, 1098, 1938). In the Nb_3Sn experiments the field inside the short-circuited coil was ~15 koe; this value was dependent on the parameters of the exciting magnet. Small coils with external supply were also examined, with leads consisting of

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S/056/61/041/006/022/054
B102/B138

Superconducting solenoids of ...

semiconducting rods prepared by the method proposed by J. E. Kunzler et al. (Phys. Rev. Lett., 6, 3, 89, 1961). There are 2 figures and 6 references: 1 Soviet and 5 non-Soviet. The four most recent references to English-language publications read as follows: V. D. Arp et al. Phys. Rev. Lett., 6, 9, 452, 1961; J. O. Betterton et al. Phys. Rev. Lett., 6, 10, 532, 1961; R. M. Bozorth et al. Phys. Rev. Lett., 5, 4, 148, 1960; J. E. Kunzler et al. Phys. Rev. Lett. 6, 3, 89, 1961.

ASSOCIATION: Institut fizicheskikh problem Akademii nauk SSSR (Institute of Physical Problems of the Academy of Sciences USSR)

SUBMITTED: July 25, 1961

Card 2/2

S/056/62/042/001/011/048
B104/B102

AUTHORS: Alekseyevskiy, N. Ye., Gaydukov, Yu. P.

TITLE: The Fermi surface of silver

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki v. 42, no. 1, 1962, 69-74

TEXT: Silver single crystals (~30 mm long, ~2 mm in diameter) were grown by the Obreimov-Shubnikov method. The following ratio was found between their resistivities at 300 and 4.2°K: $\rho_{300}/\rho_{4.2} \approx 1000$. Using a potentiometer circuit with a photoelectric amplifier the Hall e.m.f. was determined at 4.2°K in magnetic fields of up to 24 koe which were rotated in a plane perpendicular to the specimen axis. At a constant magnetic field of 23.5 koe, the resistivity of the specimens was determined as a function of the angle between the magnetic field and the crystallographic axes. Both the resistivity of the single crystals and the angular dependence of the Hall e.m.f. are strongly anisotropic. The maxima of the Hall e.m.f. are equal and lie in the directions [001].

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[110], and [111]. In the zones II of the stereographic projection of the Hall e.m.f. (Fig. 3), the latter depends linearly on the angle. In I, this dependence is almost linear. In the [112] direction the Hall e.m.f. in the magnetic field tends toward saturation. A distinct maximum of resistivity was established when the magnetic field was in the (001) plane. This 001 characteristic line in the stereographic projection was also found in gold. Distinct maxima of resistivity were found in the lines of intersection between the plane of the magnetic field and the (010) and (100) planes. The only difference in the stereographic projections of the characteristic directions of the magnetic field of the Fermi surface of silver, gold, and copper is found in the dimensions of I. As shown by I. M. Lifshits and V. G. Peschanskiy (ZhETF, 38, 188, 1960) the stereographic projection presented in Fig. 3 corresponds to an open Fermi surface of the type of a spatial network of "corrugated cylinders" with axes parallel to the [001], [110], and [111] directions. Professor I. M. Lifshits and V. G. Peschanskiy are thanked for discussions. Akademik P. L. Kapitsa for interest, and V. A. Gromakovskiy for assistance in measurements. There are 5 figures, 1 table, and 14 references: 6 Soviet and 8 non-Soviet. The four most recent references

Card 2/4

The Fermi surface of silver

to English-language publications read as follows: M. G. Priestley. Phil. Mag. 5, 111, 1960; D. Shoenberg. Phil. Mag. 5, 105, 1960; R. W. Morse, A. Myers, C. T. Walker. Phys. Rev. Lett., 4, 605, 1960; J. R. Klauder, J. E. Kunzler. Phys. Chem. Solids, 18, 256, 1961.

ASSOCIATION: Institut fizicheskikh problem Akademii nauk SSSR (Institute of Physical Problems of the Academy of Sciences USSR)

SUBMITTED: July 28, 1961

Fig. 3. Stereographic projection of the main directions of the magnetic field of the Fermi surfaces in silver, gold, and copper.

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39502

S/056/62/043/002/053/053
B108/B102

24.7600

AUTHORS: Aleksandrovskiy, N. Ye., Yegorov, V. S., Karstens, G. E., Kanak, B. N.

TITLE: Galvanomagnetic properties of transition metal single crystals

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43, no. 2(8), 1962, 731-733

TEXT: The change in resistivity of transition metal single crystals (Pd, Re, Mo) with the change in field strength of a strong magnetic field (up to some 150 koe) was studied at 4.2°K. The results show that Pd and Re have open Fermi surfaces. The Fermi surface of Pd is similar to that of Pt. The square-law increase of resistivity of Mo with increasing magnetic field strength is indicative of a closed Fermi surface. There are 2 figures and 1 table.

ASSOCIATION: Institut fizicheskikh problem Akademii nauk SSSR (Institute of Physical Problems of the Academy of Sciences USSR)

[redacted]

S/056/62/043/003/009/063
B125/B102

AUTHORS: Alekseyevskiy, N. Ye., Fam Zuy Kiyen, Shapiro, V. G., Shpinel', V. S.

TITLE: Anisotropy of the Mössbauer effect in a β-Sn single crystal

PERIODICAL: Zhurnal experimental'noy i teoreticheskoy fiziki, v. 43, no. 3(9), 1962, 790 - 794

TEXT: The resonance absorption probability f'of 23.8 kev γ-quanta in white tin was studied at 77°K and 293°K. The lamellar absorbers, about 57.5 mg/cm^2 thick, were cut out from β-Sn single crystals in the (001), (101) and (100) planes. The trial measurements were made with a polycrystalline tin foil. The γ-quantum sources, consisting of Sn^{119m} nuclei in SnO_2 (88% Sn^{118}; ~5 mg/cm^2 thick), were irradiated in a reactor. In all experiments the source was kept at room temperature. The figure shows three spectra taken at 77°K under identical geometrical conditions. Probably because of quadrupole interaction, the half-widths of the lines observed are greater than the theoretical half-widths if allowance is

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Anisotropy of the Mössbauer...

made for the effective thicknesses of absorber and source. The gradient of the electric field in β-Sn crystals is axisymmetrical in first approximation, the axis of symmetry being perpendicular to the (001) plane. The components of the absorption spectrum for the (001), (101) and (100) planes have the relative intensities a = 3, a = 9/7 and a = 3/5, a = $w_{\pm 3/2}/w_{\pm 1/2}$; $w_{\pm 3/2} \sim (1+\cos^2\theta)$, $w_{\pm 1/2} \sim ((5/3)-\cos^2\theta)$. w_{+J_2} is the resonance absorption probability of the γ-quanta to the corresponding sublevel. θ is the angle between the symmetry axis of the crystal and the direction of the incident γ-quantum. The greater the quadrupole splitting and the smaller the effective absorber thickness, the greater the shift of the absorption maximum towards the more intense component and the asymmetry of the line. The resonance absorption probabilities at 77°K are $f'_{100}:f'_{001}:f'_{polycryst}$ = 1:0.67:0.89, at 293°K, $f'_{100}:f'_{101}:f'_{001}:f'_{poly}$ = 1:0.95:0.75:0.80. There are 1 figure and 3 tables.

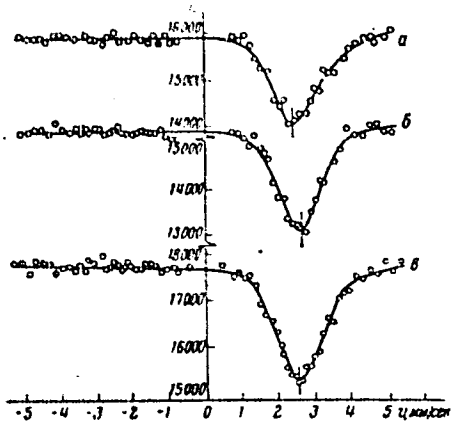
ASSOCIATION: Institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta (Institute of Nuclear Physics of the Moscow State University)

S/056/62/043/003/009/063
B125/B102

Anisotropy of the Mössbauer...

SUBMITTED: April 4, 1962

Fig. Absorption spectra taken at 77°K for plates with different orientations a - (001), [illegible] - (100), [illegible] - polycrystal. The thin vertical lines show the positions of the absorption maxima.



Card 3/3

S/056/62/043/006/022/067
B102/B104

AUTHORS: Alekseyevskiy, N. Ye., Gaydukov, Yu. P.

TITLE: The open cross sections of the Fermi surfaces of cadmium, zinc and thallium

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fizi i, v. 43, no. 6(12), 1962, 2094-2104

TEXT: Investigations of the Fermi surfaces of Cd, Zn and Tl single crystals based on measurements of the anisotropy of the electric resistivity of these crystals in strong magnetic fields are reported. $\rho_{300}/\rho_{4.2}$ was equal to about 10,000 for Cd and Tl and 15,000 for Zn. All measurements were made at 4.2°K and in fields of up to 33 koe. In most cases the sample axes were perpendicular to $\vec{H}$, in a few the deviation from orthogonality was 14°. The angular dependence of resistance, $\rho(\vec{H})$ at H-const was determined from automatic records of the emf with an ЭПП-09 (EPP-09) recorder, $\partial\vec{H}/\partial t$ was 6.7°/min. Of Cd the axes were oriented along $[10\bar{1}0]$, $[\bar{2}010]$, and $[0001]$, of Zn along $[10\bar{1}0]$, $[\bar{2}110]$,

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The open cross sections of the ...

and [0001] and of Tl only samples with its axes in the [0001] plane were investigated. For Cd the $\varrho(\vec{\nu})$ curves of the samples with the axes along [10$\bar{1}$0] and [20$\bar{2}$0] were almost equal double-leafs in polar coordinates with deep minima in the directions [$\bar{1}$2$\bar{1}$0] and [0$\bar{1}$10]. The sample with the axis parallel to [0001] showed almost no asymmetry; ϱ grew according to a square law for any direction of $\vec{H}$. Zn samples with their axes parallel to [10$\bar{1}$0] or [$\bar{2}$110] showed, in contradistinction to Cd, a second deep and narrow minimum of ϱ at $\vec{H} \parallel$ [0001]. The sample with its axis parallel to [0001] showed no anisotropy of ϱ, ϱ grew quadratically for any $\vec{H}$ direction. For Tl $\varrho(\vec{\nu})$ was measured at H=const with about 30 samples whose axes lay in the [0001] plane; $\varrho(\vec{\nu}) \sim \cos^2\vec{\nu}$, $\vec{\nu} = 0$ for $\vec{H} \parallel$ [0001]. ϱ grew linearly for $\vec{H} \parallel$ [0001], for other directions of $\vec{H}$ the growth followed a square law. The results showed that Cd, Zn and Tl possess open Fermi surfaces. For Cd the open trajectories of the conduction electrons in a magnetic field are parallel to [0001], in Zn they are parallel to [0001] or lie in the [0001] plane, in Tl they lie only in the [0001] plane. The stereographic projection of the distinguished directions of the magnetic field for the Fermi surfaces provides explanations of the

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000101010014-3"

The open cross sections of the ...

anisotropy of Q in all the cases investigated. The topology of the Fermi surfaces is discussed in detail. There are 13 figures.

ASSOCIATION: Institut fizicheskikh problem Akademii nauk SSSR
(Institute of Physical Problems of the Academy of Sciences USSR)

SUBMITTED: July 24, 1962

Card 3/3

ALEKSEYEVSKIY, N.Ye.; MIKHAYLOV, N.N.

Superconductivity of some binary and ternary alloys. Zhur.eksp. i teor.fiz. 43 no.6:2110-2113 D '62. (MIRA 16:1)

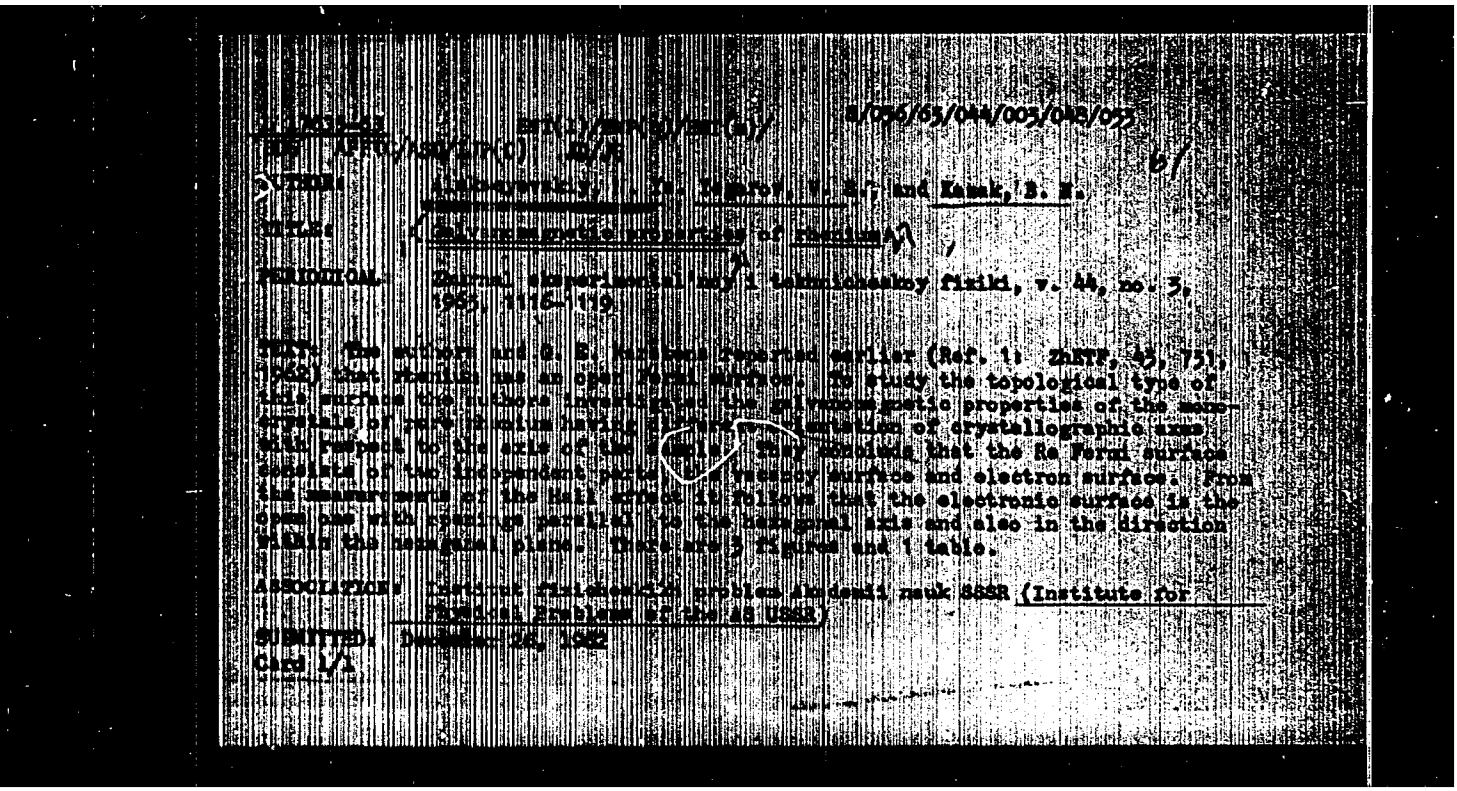
1. Institut fizicheskikh problem AN SSSR.
(Superconductivity) (Alloys)

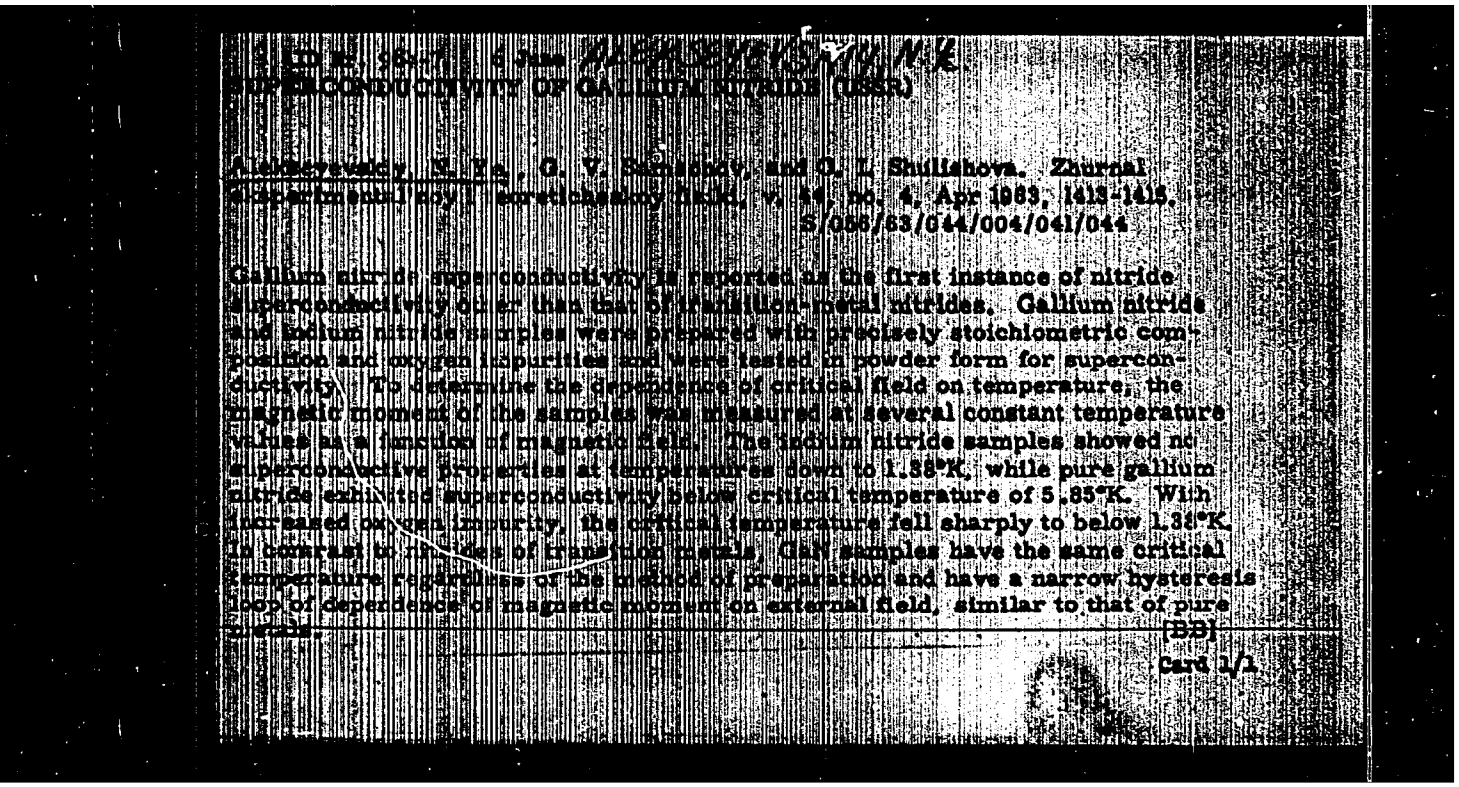
ALEKSEYEVSKIY, N.Ye.; SAVITSKIY, Ye.M.; BARON, V.V.; YEFIMOV, Yu.V.

Effect of alloyed elements on the superconducting properties of the compound V_3Si. Dokl.AN SSSR 145 no.1:82-84 Jl '62. (MIRA 15:7)

1. Institut fizicheskikh problem AN SSSR i Institut metallurgii imeni A.A.Baykova. 2. Chlen-korrespondent AN SSSR (for Alekseyevskiy).

(Superconductivity) (Vanadium silicide) (Molybdenum silicide)



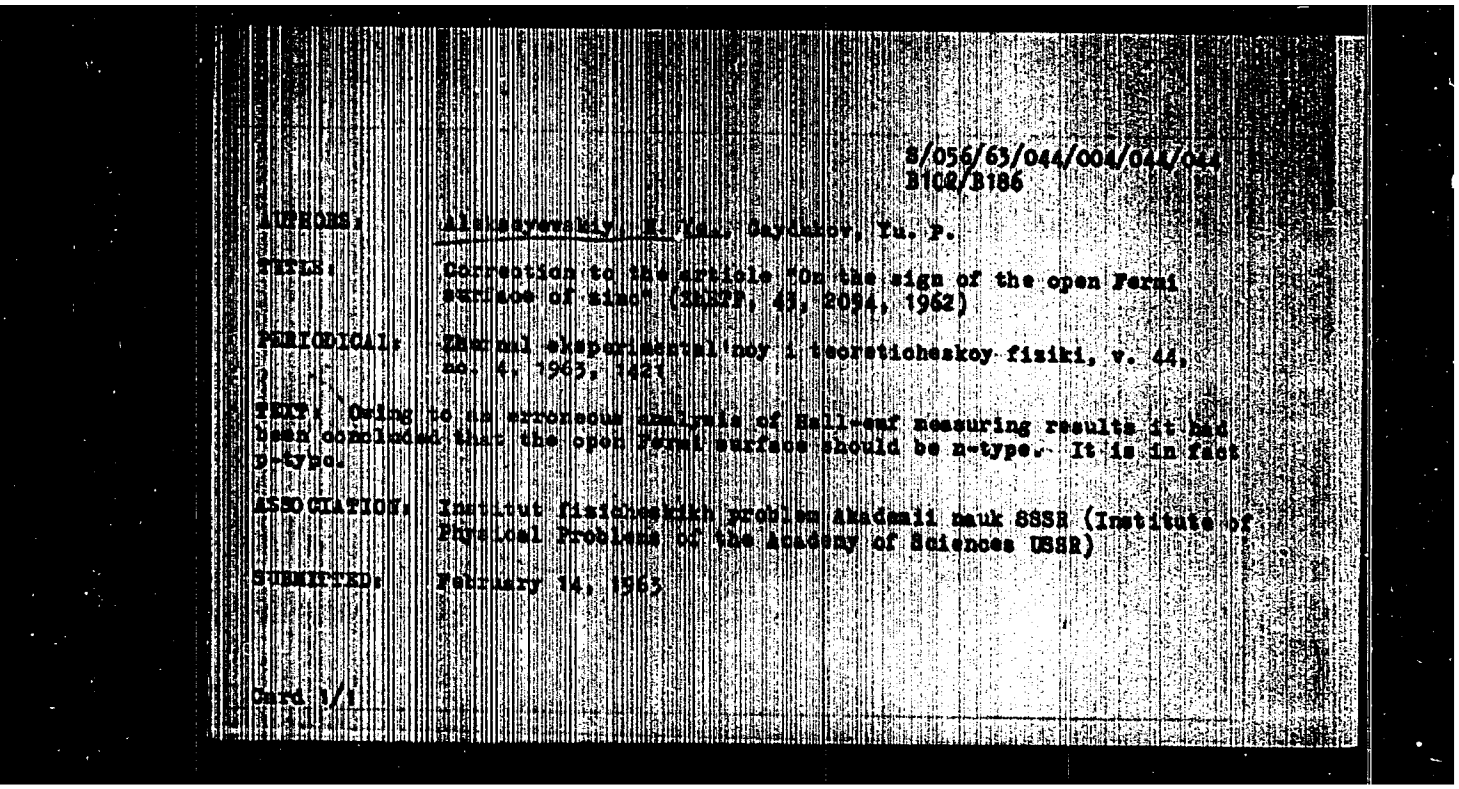


SUPERCONDUCTIVITY OF GALLIUM NITRIDE (USSR)

Alekseyevskiy, N. Ye., G. V. Samsonov, and O. I. Shulishova. Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, v. 44, no. 4, Apr 1963, 1413-1415. S/056/63/044/004/041/044

Gallium nitride type conductivity is reported as the first instance of nitride superconductivity other than that of transition-metal nitrides. Gallium nitride and sodium nitride samples were prepared with precisely stoichiometric composition and oxygen impurities and were tested in powder form for superconductivity. To determine the dependence of critical field on temperature, the magnetic moment of the samples was measured at several constant temperature values as a function of magnetic field. The sodium nitride samples showed no superconductive properties at temperatures down to 1.38°K, while pure gallium nitride exhibited superconductivity below critical temperature of 5.85°K. With increased oxygen impurity, the critical temperature fell sharply to below 1.38°K. In contrast to nitrides of transition metals, GaN samples have the same critical temperature regardless of the degree of preparation and have a narrow hysteresis loop of dependence of magnetic moment on external field, similar to that of pure [BB]

Card 1/1



S/056/63/044/004/044/044
B102/B186

AUTHORS: Alekseyevskiy, N. Ye., Gaydukov, Yu. P.

TITLE: Correction to the article "On the sign of the open Fermi surface of zinc" (ZhETF, 43, 2094, 1962)

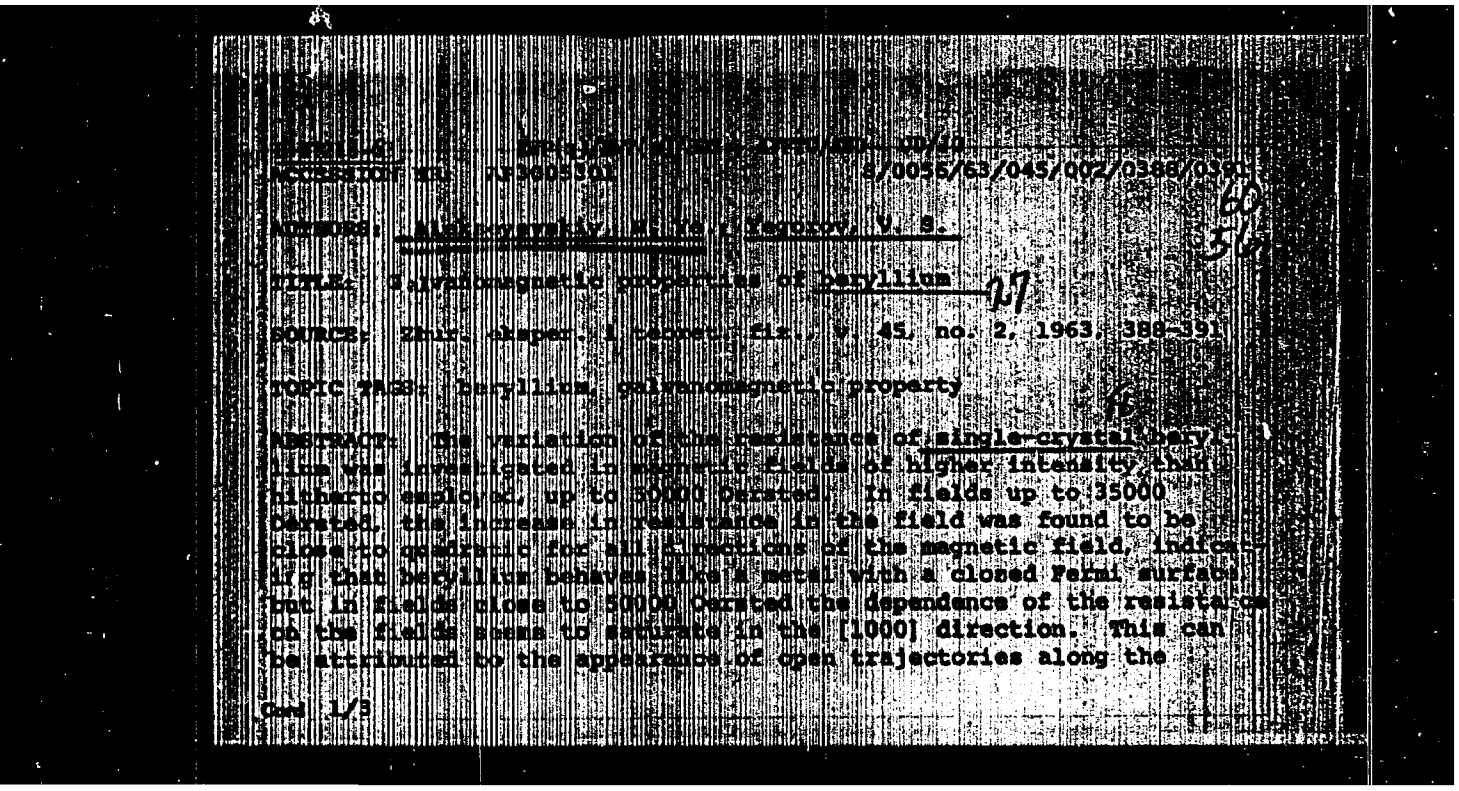
PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 44, no. 4, 1963, 1427

TEXT: Owing to an erroneous analysis of Hall-emf measuring results it had been concluded that the open Fermi surface should be n-type. It is in fact p-type.

ASSOCIATION: Institut fizicheskikh problem Akademii nauk SSSR (Institute of Physical Problems of the Academy of Sciences USSR)

SUBMITTED: February 14, 1963

Card 1/1



ACCESSION NR: AP3005301 S/0056/63/045/002/0388/0391

AUTHOR: Alekseyevskiy, N. Ye.; Yanovskiy, V. S.

TITLE: Galvanomagnetic properties of beryllium

SOURCE: Zhur. eksper. i teoret. fiz., v. 45, no. 2, 1963, 388-391

TOPIC TAGS: beryllium, galvanomagnetic property

ABSTRACT: The variation of the resistance of single-crystal beryllium was investigated in magnetic fields of higher intensity than hitherto employed, up to 50000 Oersted. In fields up to 35000 Oersted, the increase in resistance in the field was found to be close to quadratic for all directions of the magnetic field, indicating that beryllium behaves like a metal with a closed Fermi surface. But in fields close to 50000 Oersted the dependence of the resistance on the field seems to saturate in the [1000] direction. This can be attributed to the appearance of open trajectories along the

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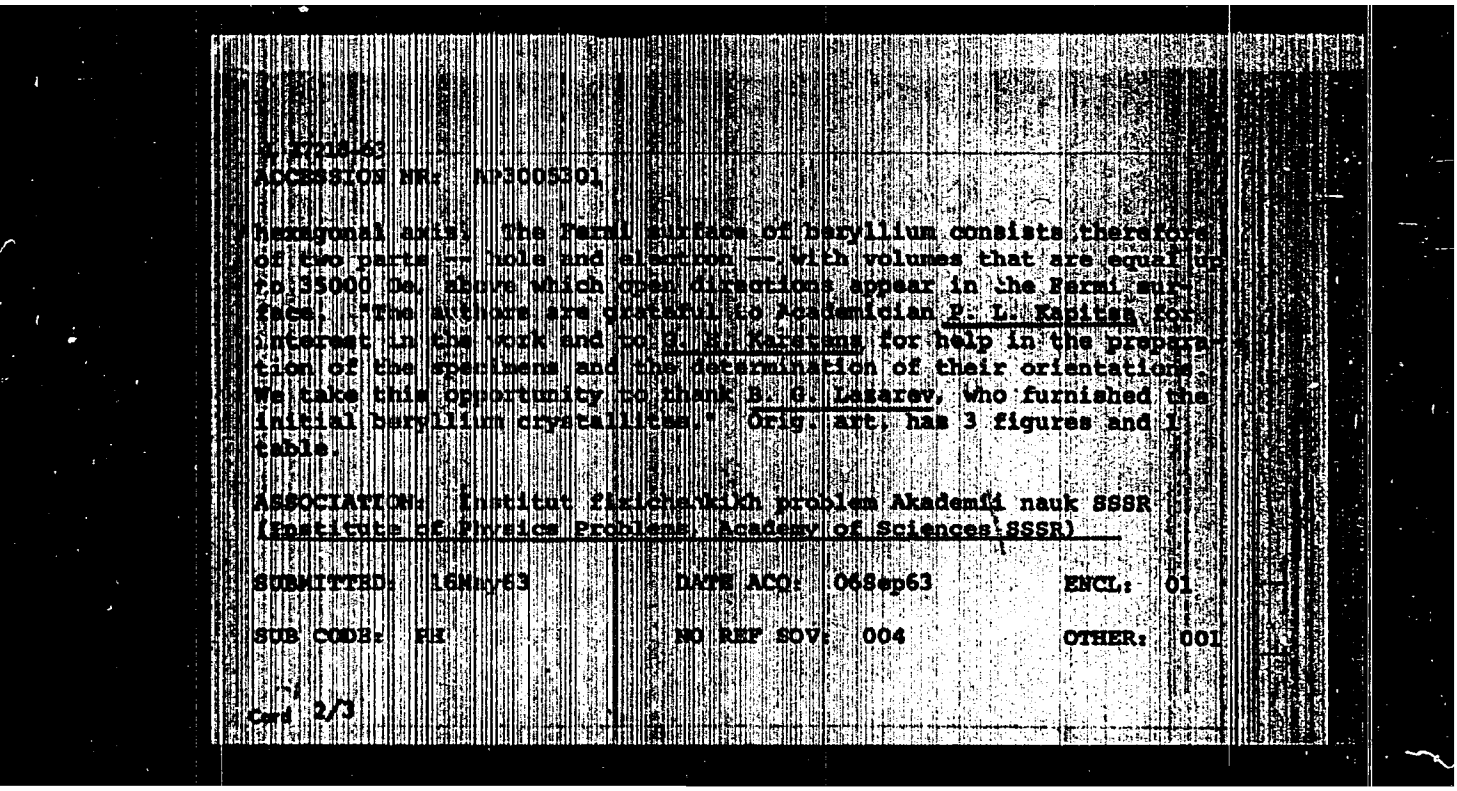


ACCESSION NR: AP3005301

hexagonal axis. The Fermi surface of beryllium consists therefore of two parts -- hole and electron -- with volumes that are equal to 0.35000 De. There which open directions appear in the Fermi surface. "The Authors are grateful to Academician P. L. Kapitsa for interest in the work and to S. Ye. Kaverina for help in the preparation of the specimens and the determination of their orientations. We take this opportunity to thank B. G. Lazarev, who furnished the initial beryllium crystallites." Orig. art. has 3 figures and 1 table.

ASSOCIATION: Institut fizicheskikh problem Akademii nauk SSSR (Institute of Physics Problems, Academy of Sciences SSSR)

SUBMITTED: 16May63 DATE ACQ: 06Sep63 ENCL: 01

SUB CODE: PH NO REF SOV: 004 OTHER: 001

Card 2/3

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000101010014-3"

ALEKSEYEVSKIY, M.Ya.; YEGOROV, V.S.

Measuring the resistance of single crystals in a pulsed magnetic field. Zhur. eksp. i teor. fiz. 45 no.3:448-454 S '63. (MIRA 16:10)

1. Institut fizicheskikh problem AN SSSR.
(Crystals--Galvanomagnetic properties)
(Magnetic fields)

ACCESSION NR: AP4031138 S/0056/64/046/004/1205/1207

AUTHORS: Alekseyevskiy, N. Ye.; Yegorov, V. S.

TITLE: Concerning magnetic breakdown in beryllium

SOURCE: Zh. eksper. i teor. fiz., v. 46, no. 4, 1964, 1205-1207

TOPIC TAGS: beryllium, galvanomagnetic effect, magnetic field, resistivity, magnetic breakdown

ABSTRACT: This is a continuation of work reported earlier (ZhETF v. 45, 388, 1963) and aimed at checking the change in the variation of resistance with the magnetic field above 50 kOe. The measurements were made on a single crystal of beryllium in different effective fields at temperatures 4.2 and 78K. Pulsed magnetic fields were used in a measurement procedure which was also described earlier (ZhETF 45, 448, 1963). The results are in good agreement with those obtained earlier, in that the change in the law of resistance rise

Card 1/4

ACCESSION NR: AP4031138

occurs at the same value of the magnetic field (45 kOe at 4.2K and 40--50 kOe at 78K). This behavior of resistance is attributed again to magnetic breakdown. It is emphasized, however, that this interpretation of the results is only qualitative and cannot be used as yet for quantitative estimates. Orig. art. has: 2 figures.

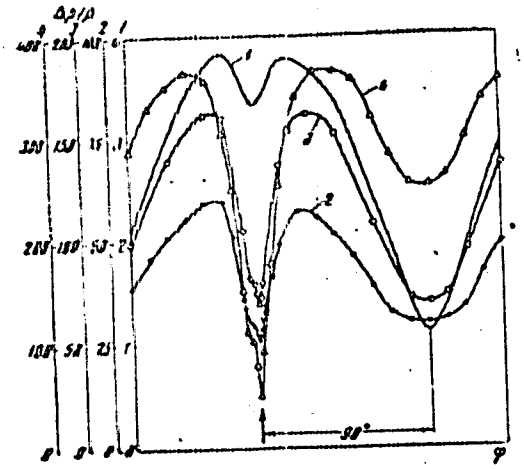
ASSOCIATION: Institut fizicheskikh problem AN SSSR (Institute of Physics Problems AN SSSR)

SUBMITTED: 05Oct63	DATE ACQ: 07May64	ENCL: 02
SUB CODE: EM, SS	NR REF SOV: 003	OTHER: 002

Card 2/4

ACCESSION NR: AP4031138

ENCLOSURE: 01

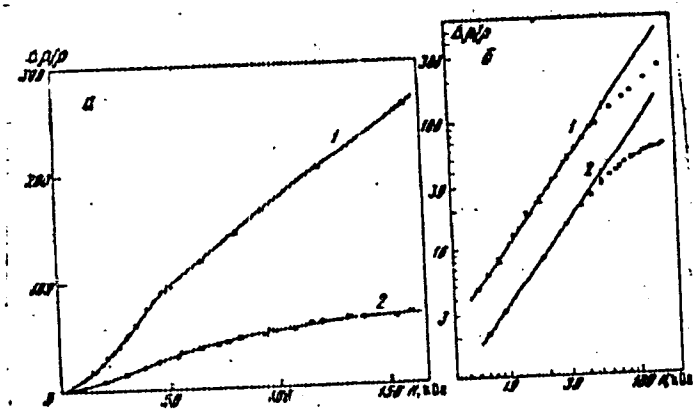


Angular diagrams showing the variation of the resistance of beryllium in a transverse magnetic field. The hexagonal axis is perpendicular to the current. H is perpendicular to the hexagonal axis in the direction of the arrow Curve 1 (obtained in stationary field) - T = 4.2K, H = 5 kOe; 2 - 78K and 44 kOe; 3 - 4.2K and 34 kOe; 4 - 78K and 150 kOe

Card 3/4

ACCESSION NR: AP4031138

ENCLOSURE: 02



Dependence of change in resistance on the magnetic field when the field is perpendicular to the [0001] axis. Curves 1 - T = 4.2K, 2 - 78K (a - linear scale, b - logarithmic)

Card 4/4

ACC NR: AP7001344 SOURCE CODE: UR/0386/66/004/011/0468/0470

AUTHOR: Alekseyevskiy, N. Ye.

ORG: Institute of Physics Problems, Academy of Sciences SSSR (Institut fizicheskikh problem Akademii nauk SSSR)

TITLE: Use of ruby to obtain infralow temperatures by adiabatic demagnetization

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniye, v. 4, no. 11, 1966, 468-470

TOPIC TAGS: ruby, adiabatic process, paramagnetic cooling, Curie point, low temperature research

ABSTRACT: In view of numerous difficulties (easy decomposition, low thermal conductivity, brittleness) of the substances presently used for adiabatic-demagnetization cooling the authors experimented with a cylindrical ruby crystal whose geometical axis was inclined ~60° to the principal crystal axis. The chromium content was ~0.5%. An electromagnet (~25 kOe) was used in most measurements, but a superconducting-solenoid magnet (~55 kOe) was used in some of them. The initial temperature was 1.4K. An indirect procedure had to be used to measure the magnetic temperature when the superconducting solenoid was used. The transition temperatures of Cd films evaporated at helium temperature on one of the polished faces of the ruby was measured by a method described by the author earlier (Tenth Intern. Conf. on Low-Temperature Physics, Moscow, 1966). It is concluded from the results that in spite of having a magnetic sus-

Card 1/2

ACC NR: AP7001344

ceptibility lower than the paramagnetic salts, ruby is perfectly suitable for use in adiabatic-demagnetization apparatus for the production of infralow temperatures. If a field of ~50 kOe is used, the final temperature can reach ~0.05K. Since the Curie point of ruby may be quite low, it can be used in many cases as the second stage in two-stage adiabatic-demagnetization apparatus. Ruby can also be used in cyclic installation, and than the use of superconducting switches may be more convenient than in installations with paramagnetic salts. Ruby is especially convenient for the investigation of thin metal and semiconductor films at infralow temperatures, since its surface can be polished to a high degree, and the crystal itself has a high thermal conductivity. Orig. art. has: 1 figure.

SUB CODE: 20/ SUBM DATE: 15Sep66/ ORIG REF: 002/ OTH REF: 003/
ATD PRESS: 5108

Card 2/2

ACC NR: AP7002403 SOURCE CODE: UR/0363/66/002/012/2156/2161

AUTHOR: Alekseyevskiy, N. Ye.; Ageyev, N. V.; Shamray, V. F.

ORG: Institute of Metallurgy im. A. A. Baykov Academy of Sciences SSSR (Institut metallurgii Akademii Nauk SSSR)

TITLE: The critical temperature of the transition to the superconducting state of the β-phase in the Nb-Sn-Al-Ge system

SOURCE: AN SSSR. Izvestiya. Neorganicheskiye materialy, v. 2, no. 12, 1966, 2156-2161

TOPIC TAGS: niobium, tin alloy, aluminum containing alloy, germanium containing alloy, superconducting alloy, ~~superconduction transition~~ temperature, ~~alloy transition~~ temperature, phase transition

ABSTRACT: Beta-alloys of the Nb-Sn-Al-Ge system with various contents of the alloying elements were levitation melted from 99.8%-pure niobium and 99.999%-pure aluminum, tin and germanium, homogenized at 600C for 250 hr and water quenched. Nb_3Sn, Nb_3Al and Nb_3Ge compounds were found to have a temperature of transition to the superconducting state (T_{cr}) of 18.1, 17.4 and 7.1K, respectively. With increasing Sn content in alloys of the pseudobinary Nb_3Sn-Nb_3Al section, T_{cr} gradually decreased, reached a minimum at the Sn:Al ratio of 1:1, and gradually increased again with a further increase in the Sn content. In alloys of the Nb_3Sn-Nb_3Ge section, T_{cr} dropped sharply with

Card 1/3 UDC: 546.3—19—882—811—621—289

ACC NR: AP7002403

an increase of Nb_3Ge content to about 70%, and then remained almost constant. With small increases in the Ge content of alloys along the Nb_3Al-Nb_3Ge section, T_{cr} slightly increased to a maximum in an alloy with a 4:1 Al:Ge ratio, and then decreased continuously with increasing Ge content. The

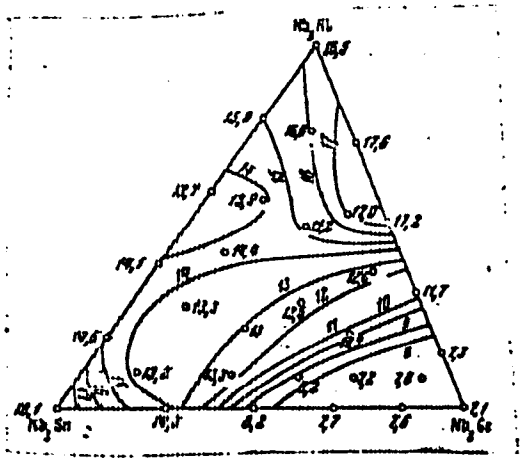


Fig. 1. Critical temperatures (K°) of alloys of the Nb_3Sn-Nb_3Al-Nb_3Ge section

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ACC NR: AP7002403

composition dependence of T_{cr} in the Nb_3Sn-Nb_3Al-Nb_3Ge section is shown in Fig. 1. The critical temperature T_{cr} was also found to increase with the increasing degree of ordering of the investigated alloys. In the Nb-Sn-Al-Ge system, the value of T_{cr} appears to be determined mainly by the density of states at the Fermi surface. Orig. art. has: 7 figures.

SUB CODE: 11, 20/ SUBM DATE: 09Mar66/ ORIG REF: 007/ OTH REF: 008/
ATD PRESS: 5113

Card 3/3

ACC NR: AP7001546 SOURCE CODE: UR/0020/66/171/003/0566/0569

AUTHOR: Alekseyevskiy, N. Ye. (Corresponding member AN SSSR); Dubrovin, A. V.; Mikhaylov, N. N.; Sokolov, V. I.; Fedotov, L. N.

ORG: Central Scientific Research Institute of Ferrous Metallurgy im. I. P. Bardin (Tsentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii)

TITLE: Basic properties of 65BT-type superconducting alloy wire in specimens and solenoids

SOURCE: AN SSSR. Doklady, v. 171, no. 3, 1966, 566-569

TOPIC TAGS: superconducting alloy, niobium titanium alloy, zirconium containing alloy, niobium titanium alloy wire, alloy wire superconducting property

ABSTRACT:
A method of protecting superconductors from damage during the transition from superconducting to normal state has been developed. The 65BT superconducting niobium-titanium alloy wire (65% niobium and some zirconium) was developed by the Institute of Precision Alloys at the Central Scientific Research Institute of Ferrous Metallurgy. At 293, 77 and 20K the wire has a tensile strength of 81, 140 and 192 kg/mm^2, a notch toughness of 18.5, 5.8 and 4.4 kg/cm^2, and a resistivity of 70, 59 and 56·10^{-6} ohm·cm, respectively. The critical temperature of the wire is 9.7K and the critical magnetic field at 4.2K is 90 kilo-oersteds. It was found that a thin copper coating effectively

Card 1/2 UDC: 537.312.62

ACC NR: AP7001546

prevents wire damage during the transition from the superconducting to the normal state. Wire 0.25 mm in diameter was coated with a layer of copper, 10—20 μ thick, and used for solenoids with field intensities of 19 and 54 kilo-oersteds. The solenoids withstood long periods of operation and proved to be stable and reliable. They were used in studying galvanomagnetic properties of pure metals in semiconductors, in investigating the critical parameters of superconducting materials, etc. Orig. art. has: 4 figures and 2 tables.

SUB CODE: 11, 09, 20/ SUBM DATE: 30Jul66/ ORIG REF: 001/ OTH REF: 003
ATD PRESS: 5111

Card 2/2

ACC NR: AP7006203 SOURCE CODE: UR/0363/67/003/001/0061/0066

AUTHOR: Alekseyevskiy, N. Ye.; Samsonov, G. V.; Shulishova, O. I.

ORG: Institute of Materials Science Problems, Academy of Sciences, UkrSSR, Kiev (Institut problem materialovedeniya Akademii nauk UkrSSR)

TITLE: Superconductivity of solid solutions of transition metal carbides and nitrides

SOURCE: AN SSSR. Izvestiya. Neorganicheskiye materialy, v. 3, no. 1, 1967, 61-66

TOPIC TAGS: superconductivity, carbide, nitride, transition metal compound

ABSTRACT: The temperatures of transition to the superconducting state were studied in systems of solid solutions TiC-NbC, ZrC-NbC, HfC-NbC, ZrC-TaC, HfC-TaC, HfC-MoC, TaC-MoC, NbC-NbN and TaC-NbC, constituting a class of compounds with a face-centered cubic NaCl-type lattice. The transition temperatures were determined from the change in the mutual induction of the measuring coils on an alternating current bridge. All the values of the critical temperature were extrapolated to a zero magnetic field. For all systems except TaC-NbC, a nonlinear change of the critical temperature with the composition was established. The observed regularities in the change of the critical temperature in these solid solution systems are analyzed, and it is postulated that change of T_c with the composition results from a change in the density of the electron states. Orig. art. has: 1 figure, 2 tables and 1 formula.

SUB CODE: 07,20/ SUBM DATE: 15Jan66/ ORIG REF: 004/ OTH REF: 013

Card 1/1 UDC: 537.312.62

ACC NR: AP7005751 (A) SOURCE CODE: UR/0126/67/023/001/0028/0036

AUTHOR: Alekseyevskiy, N. Ye.; Ivanov, O. S.; Rayevskiy, I. I.; Stepanov, N. V.

ORG: Institute of Metallurgy im. A. A. Baykov, Academy of Sciences SSSR (Institut metallurgii)

TITLE: Phase diagram of the niobium titanium-zirconium system and superconducting properties of its alloys

SOURCE: Fizika metallov i metallovedeniye, v. 23, no. 1, 1967, 28-36

TOPIC TAGS: niobium, titanium, zirconium, ~~system, niobium-titanium zirconium alloy~~, alloy phase diagram, ~~alloy phase composition~~, alloy ~~structure~~ ternary system, superconducting alloy

ABSTRACT: A study has been made of several alloys of the niobium-titanium-zirconium system at five sections with a constant niobium content of 6, 12, 30, 50 and 70%. Alloys were melted from 99.7%-pure iodide zirconium, 99.8%-pure iodide titanium and 99.7%-pure cermet niobium. Phase diagrams of the system at 500, 550, 600 and 800°C were plotted on the basis of obtained data. It was found from the phase diagrams that the area of splitting into two solid solutions $\beta_{Nb} + \beta_{Zr}$ gradually narrows with the introduction of titanium

Card 1/3 UDC: 669.017:537.312.62

into the alloys. At temperatures below 525°C, ternary alloys of the area adjacent to the niobium corner of the system are in a two-phase state $\beta_{Nb} + \alpha_{Ti-Zr}$. The one-phase area of β_{Nb}-solid solution at 550—500°C juts out into the ternary system along the line bisecting the niobium angle of the diagram. An even decrease of the critical temperature of transition to the superconducting state was observed in alloys which were in the state of β-solid solution and were subjected to a high degree of cold deformation (96% reduction). At a complete replacement of zirconium with titanium, this decrease was 1—2°K (see Fig. 1). In sections at 30 and 50% (Ti + Zr) of

ACC NR: AP7005751

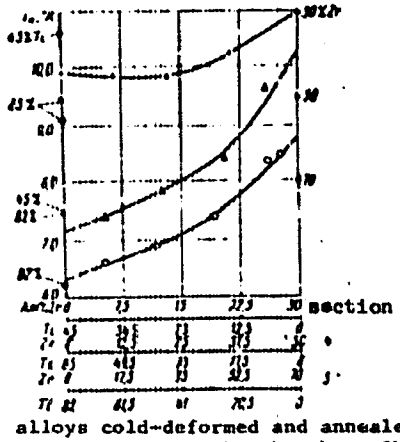


Fig. 1. Composition dependence of the temperature of transition to the superconducting state for alloys of the niobium-titanium-zirconium system

▲ - [6] Cast specimens; ● - [5] cold deformation (96% reduction); sections: + - 3; △ - 4, ○ - 5.

alloys cold-deformed and annealed at 550°C, only a small decrease of critical current density in a field of 20,000 oersteds was noticed when about half the zirconium was replaced with titanium. Orig. art. has: 10 figures and 2 tables. [TD]

SUB CODE: 11/ SUBM DATE: none/ ATD PRESS: 5117

Card 3/3

ACC NR: AP7006124 SOURCE CODE: UR/0056/67/052/001/0040/0041

AUTHOR: Alekseyevskiy, N. Ye.; Mikheyeva, M. N.

ORG: none

TITLE: The superconducting properties of aluminum films

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 52, no. 1, 1967, 40-41

TOPIC TAGS: aluminum, aluminum film, superconductivity, ~~aluminum film superconductivity, aluminum film critical temperature~~, METAL FILM, CRITICAL POINT

ABSTRACT: The superconducting properties of thin aluminum films, obtained by vaporization and condensation in a 10^{-6}—10^{-7} mm Hg vacuum at liquid nitrogen temperature and annealed to room temperature, have been investigated. It was found that the critical temperature increases with decreased film thickness. For instance, the critical temperature of a film, $8.9 \cdot 10^{-6}$ cm thick, was 1628°K, while that of a film, $7.9 \cdot 10^{-6}$ cm thick, was 1904°K. It is concluded that, since the experiment was conducted in vacuum, the high critical temperatures of thin aluminum films were not the result of the formation of oxide layers on their surfaces. [TD]

SUB CODE: 11,20 / SUBM DATE: none

Card 1/1 UDC: none

SHILOV, M.N.; SKIBO, N.S.; ROGOZHINA, N.V.; SHAPOSHNIKOV, Ya.P.; STEPANYUK, A.I.; APTEKAREV, M.A.; NEVZOROV, P.L.; TABAKO, P.I.; ALEKSEYEVSKIY, V.L.; ARTEMOV, N.N.; GRABOVSKIY, V.V.; MNOGOLET, V.Ya.

[Cultivation practices for increasing crop yields in Groznyy Province] "Agrotekhnicheskie meropriiatiia po povysheniiu urozhainosti dlia Groznenskoi oblasti." Groznyi, Groznenskoe obl.izd-vo. Pt.1. [Cultivation of field crops] Polevodstvo. 1945. 178 p. (MIRA 13:8)

1. Groznyy. Oblastnoy zemel'nyy otdel. 2. Glavnyy agronom Groznenskogo Oblastnogo zemel'nogo otdela (for Shilov). 3. Groznenskiy Oblastnoy zemel'nyy otdel (for Skibo, Rogozhina, Shaposhnikov, Stepanyuk, Aptekarev). 4. Direktor Opytnoy stantsii Groznenskoy oblasti (for Grabovskiy). 5. Inspektor Inspektury po sortoispytaniyu zernovykh i maslichnykh kul'tur i trav Ministerstva sel'skogo khozyaystva SSSR (for Mnogolet).
(Groznyy Province--Field crops)

ALEKSEYEVSKIY, V.P. (Kiyev)

A problem concerning the jet theory. Prikl.mat. i mekh. 22 no.6:833-838 N-D '58. (MIRA 11:12)
(Jets)

10(2),10(4),16(1)
AUTHOR: Alekseyevskiy,V.P. SOV/41-11-2-9/17

TITLE: On the Velocity Field Caused by the Action of Instantaneous Forces in an Infinite Layer of an Ideal Incompressible Fluid

PERIODICAL: Ukrainskiy matematicheskiy zhurnal, 1959, Vol 11, Nr 2, pp 199-203 (USSR)

ABSTRACT: The academician M.A.Lavrent'yev conjectured that the determination of finite deformations of different media (metals etc.) in the neighborhood of points of attack of strong impulsive charges (explosions) can be carried out approximately by the velocity field appearing in an ideal incompressible fluid by impulsive charge. With regard to the importance of the deformation problem the author determines the velocity field in the plane and axial-symmetric case. The obtained fields show a good qualitative agreement with experimentally obtained deformations of surfaces of steel plates in the neighborhood of openings enlarged by an explosion.
There are 4 figures, and 2 Soviet references.

SUBMITTED: July 15, 1957

Card 1/1

ALEKSEYEVSKIY, V.V.

ALEKSEYEVSKIY, V.V. CAND TECH SCI

Dissertation: "Investigation and Calculation of a New Bimetallic Mechanism."

5 May 49
Scientific Council of Sci Res Inst, Min of Electrical Industry.

SO Vecheryaya Moskva
Sum 71

ALEKSEYEVSKIY, V. V.

ALEKSEYEVSKIY, V. V.

157T35

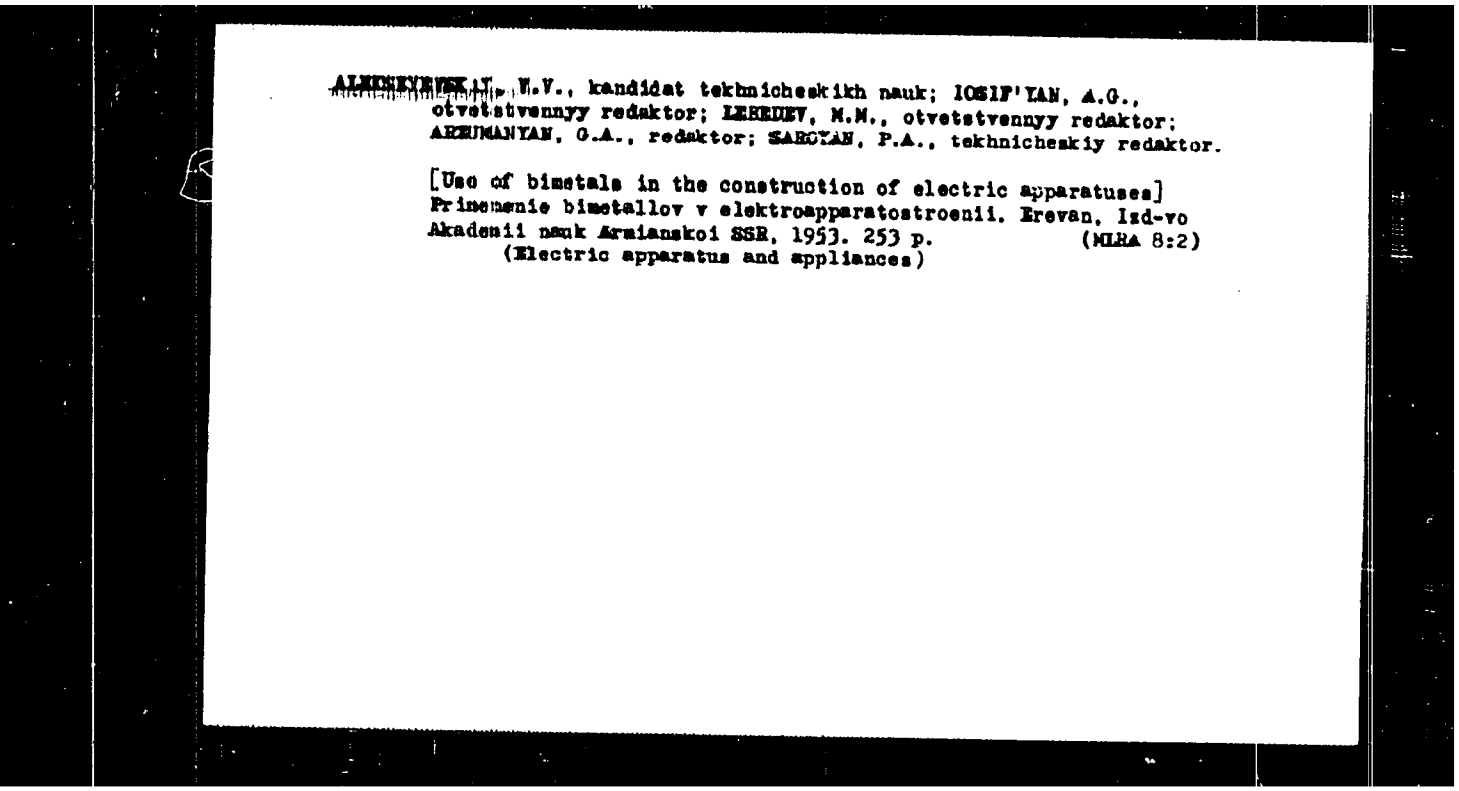
USSR/Electricity - Relays, Thermal Nov 49
Electric Systems,
Protection

"New Series of Thermal Relays," V. V. Alekseyevskiy, Cand Tech Sci, Sci Res Inst, Min of Elec Ind, 2 pp

"Vest Elektro-Prom" No 11

Describes Type TRA and TRB thermal relays, designed by Sci Res Inst, Min of Elec Ind, intended for protecting AC and DC installations from overloads. Includes two photographs, two graphs, and block diagram.

[redacted] 157T35



ALEKSEYEVSKIY, V.V., kandidat tekhnicheskikh nauk; IOSIF'YAN, A.G., otvetstvennyy redaktor; LEBEDEV, M.M., otvetstvennyy redaktor; ARZUMANYAN, G.A., redaktor; SARGSYAN, P.A., tekhnicheskiy redaktor.

[Use of bimetals in the construction of electric apparatuses] Primenenie bimetallov v elektroapparatostroenii. Erevan, Izd-vo Akademii nauk Armianskoi SSR, 1953. 253 p. (MLRA 8:2)
(Electric apparatus and appliances)

8(3) SOV/112-58-3-3826

Translation from: Referativnyy zhurnal. Elektrotekhnika, 1958, Nr 3, p 45 (USSR)

AUTHOR: Alekseyevskiy, V. V.

TITLE: Type KTP Rural Transformer-Substation Assemblies (Komplektnyye transformatornyye podstantsii tipa KTP sel'skogo khozyaystva)

PERIODICAL: V sb.: Raboty M-va elektrotekhn. prom-sti SSSR po mekhaniz. i avtomatiz. nar. kh-va. Vol 1, M., 1956, pp 118-122

ABSTRACT: An Armenian electric manufacturing plant (Armelektrozavod, Yerevan) produces type KTP step-down transformer-substation assemblies for outdoor installations, 10/0.4-0.23 kv with one transformer 20-100 kva, intended for electrification of agriculture. The KTP comprises: an enclosed frameless cubicle (with switch gear) made from sheet steel, and an outdoor oil-type self-cooled flange-type transformer. The KTP operation is guaranteed with ambient-air temperatures between -35°C and +35°C. The switch gear and the transformer are mounted on two metal slide rails and are

Card 1/2

Type KTP Rural Transformer-Substation Assemblies

rigidly fastened to each other by metal strips. The switchgear has two sections, low-voltage and high-voltage. The following 10-kv equipment is mounted in the latter: a 3-pole disconnecting switch, high-voltage fuses and valve-type lightning arresters. Side doors in the switchgear cubicle are provided which open only after the disconnecting switch has been opened by the handle mounted in the low-voltage section. High and low bushings of the transformer are mounted on one of its broad sides and are enclosed in a metal housing. The KTPs are shipped assembled from the factory; only the high-voltage bushings are dismantled from the switchgear top. The KTP metal structure weighs only 0.4 tons. The overall KTP cost including the mounting work is 20-25% lower than that of a standard pole-type outdoor substation. The electric-connection diagram and technical data of KTP equipment are presented.

I.S.Shch.

ALEKSEYEVSKIY, V., inzh.; CHATINYAN, Yu., inzh.; MATEVOSYAN, M., inzh.

Protected insulated input for high-voltage units. Prom.Arm. 6 no.10: 63-66 O '63. (MIRA 17:1)

1. Armyanskiy filial Vsesoyuznogo nauchno-issledovatel'skogo instituta elektromekhaniki.

ACC NR: AP6029762 (A) SOURCE CODE: UR/0414/66/000/002/0099/0106

AUTHOR: Alekseyevskiy, V. P. (Kiev)

ORG: none

TITLE: Penetration of a barrier by a high velocity rod

SOURCE: Fizika goreniya i vzryva, no. 2, 1966, 99-106

TOPIC TAGS: metal property, solid mechanical property, metal stress, deformable projectile, impact test

ABSTRACT: An analytical treatment of the problem is given considering three parameters of the barrier material as variables: the dynamic hardness, specific stress of deformation and the specific work of displacement. An expression characterizing penetration is derived in terms of the ratio of penetration depth to the length of the portion of the rod used up. An experiment conducted on a copper barrier penetrated by an iron rod with a velocity of 1470 m/sec showed satisfactory agreement with the expression derived. The limitations of the expression are discussed. Orig. art. has: 2 figures, 17 formulas.

SUB CODE: 11,20/ SUBM DATE: 15Jul65/ ORIG REF: 005/ OTH REF: 001

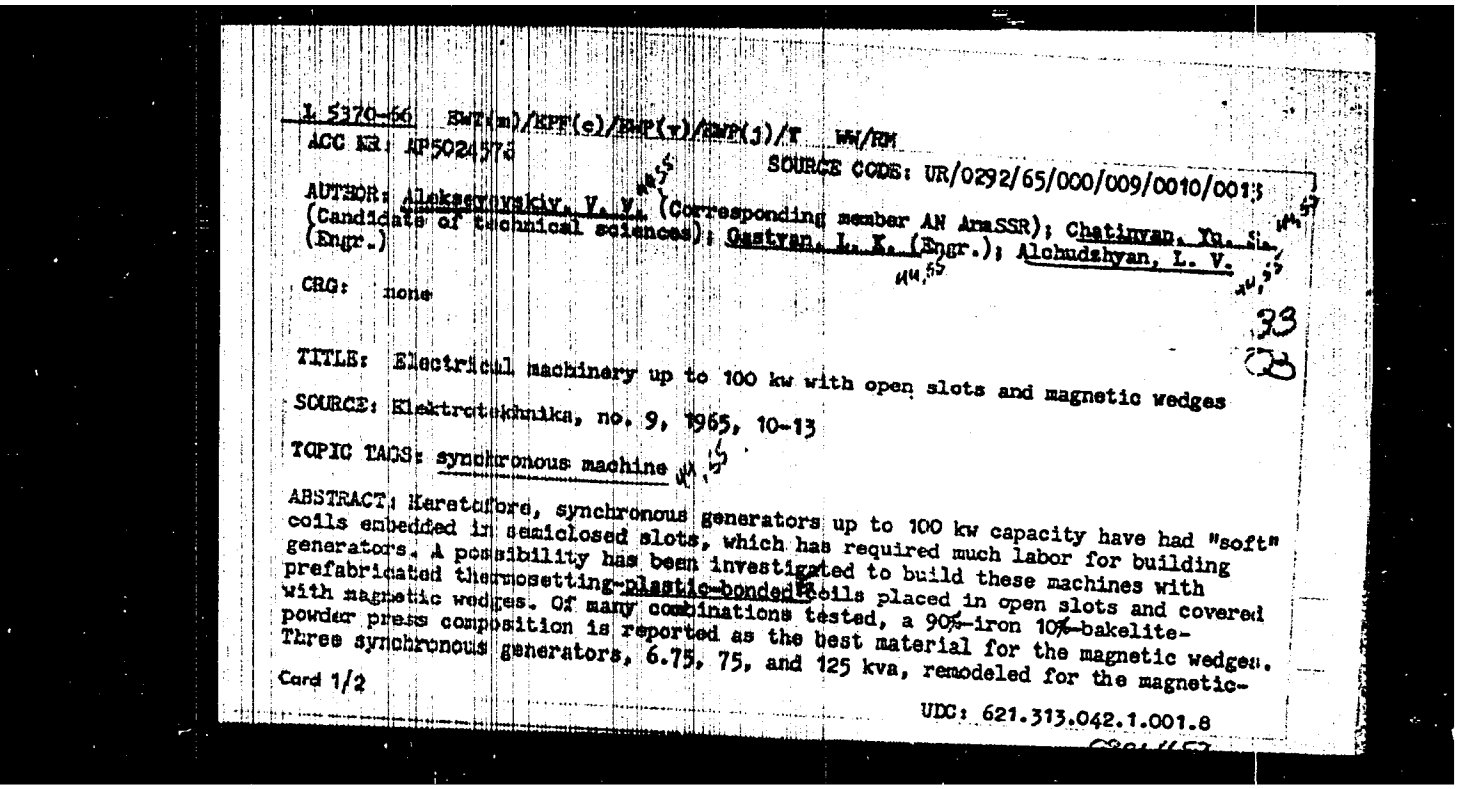
UDC: 532.501.32

Card 1/1

ALEKSEYEVSKIY, V.V.; KARAPETYAN, V.N., inzh.; GRIGORYAN, Ye.B., inzh.

New series of distribution transformers with 160 - 630 kv.-a power rating. Vest. elektroprom. 34 no.4:25-26 Ap '63. (MIRA 16:10)

1. Chlen-korrespondent AN Armyanskoy SSR (for Alekseyevskiy).



L 5370-66 EWT(m)/EPF(c)/EWP(t)/EWP(b)/T WW/RM

ACC NR: AP5024573 SOURCE CODE: UR/0292/65/000/009/0010/0013

AUTHOR: Alekseyevskiy, V. V. (Corresponding member AN ArmSSR); Chatinyan, Yu. S. (Candidate of technical sciences); Gastyan, L. K. (Engr.); Alchudzhyan, L. V. (Engr.)

ORG: none

TITLE: Electrical machinery up to 100 kw with open slots and magnetic wedges

SOURCE: Elektrotekhnika, no. 9, 1965, 10-13

TOPIC TAGS: synchronous machine

ABSTRACT: Heretofore, synchronous generators up to 100 kw capacity have had "soft" coils embedded in semiclosed slots, which has required much labor for building generators. A possibility has been investigated to build these machines with prefabricated thermosetting-plastic-bonded coils placed in open slots and covered with magnetic wedges. Of many combinations tested, a 90%-iron 10%-bakelite-powder press composition is reported as the best material for the magnetic wedges. Three synchronous generators, 6.75, 75, and 125 kva, remodeled for the magnetic-

Card 1/2

UDC: 621.313.042.1.001.8

L 5370-66
ACC NR: AP5024576

Wedge construction were tested (numerical results tabulated). It is found that: (1) The use of magnetic wedges, instead of glass-textolite ones, results in a lower weight of copper and a higher efficiency thanks to lower excitation current and lower no-load losses; (2) The reactances x_p, x_s, x_d'', x_q'' increase, when the magnetic wedges are used, within a permissible range; (3) Practical adoption of magnetic wedges would require better press molds and a more suitable (than bakelite) bond material. Orig. art. has: 4 figures and 4 tables.

SUB CODE: EE/ SUBM DATE: 00/ ORIG REF:000/ OTH REF: 000

Card 2/2

ALEKSEYEVSKIY, V.Ye., inzh.-geolog

Filtration from the main canal of the Ingulets irrigation system.
Gidr. i mel. 14 no.2:23-27 F '62. (MIRA 15:1)

1. Ukrainskoye upravleniye vodnogo stroitel'stva i amelioratsii.
(Ingulets Valley--Irrigation canals and flumes) (Seepage)

1ST AND 2ND ORDERS

3RD AND 4TH ORDERS

PROCESSES AND PROPERTIES INDEX

Preparation and properties of an active alumina catalyst for industrial purposes. I. V. Aleksandrovskii and I. G. Paris. *Zhur. Prikladnoi Khim.* 3, 849-62(1930); cf. C. A. 24, 4912. —A dehydrating catalyst is prepd. by mixing 70% air dried hydrated alumina, ground to pass a sieve contg. 900 openings per sq. cm., with 30% kaolin from Glukhov, steaming the mixt. for 1 hr., adding enough H_2O to form a paste and forming hollow rings 12 mm. in diam. and 30 mm. high, which are dried for several hrs. at 150°. Hydrated Al_2O_3 is best prepd. by pptg. it with HCl from Na aluminate soln. or with NH_3 from $Al_2(SO_4)_3$ soln. The catalyst is used commercially for dehydrating EtOH.

V. Kalichevsky

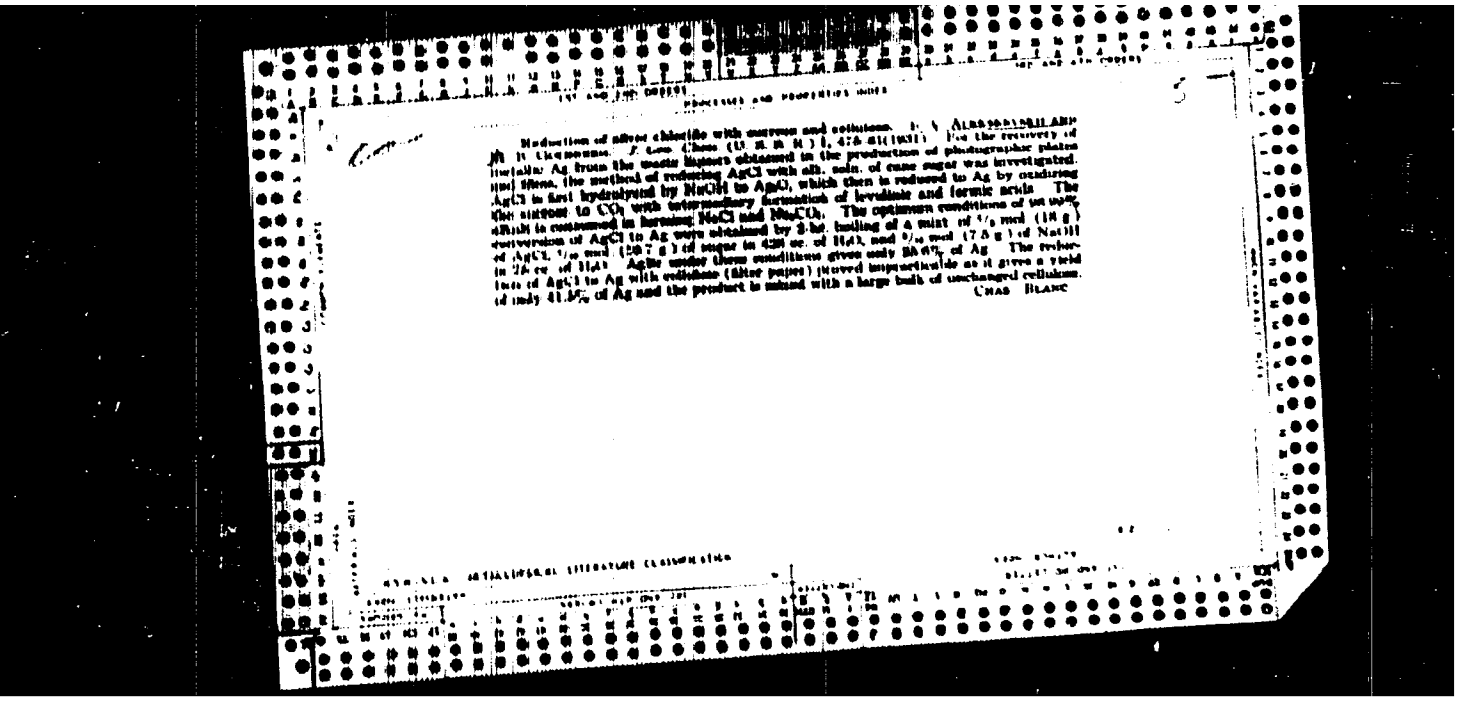
A.S.M.-S.L.A. METALLURGICAL LITERATURE CLASSIFICATION

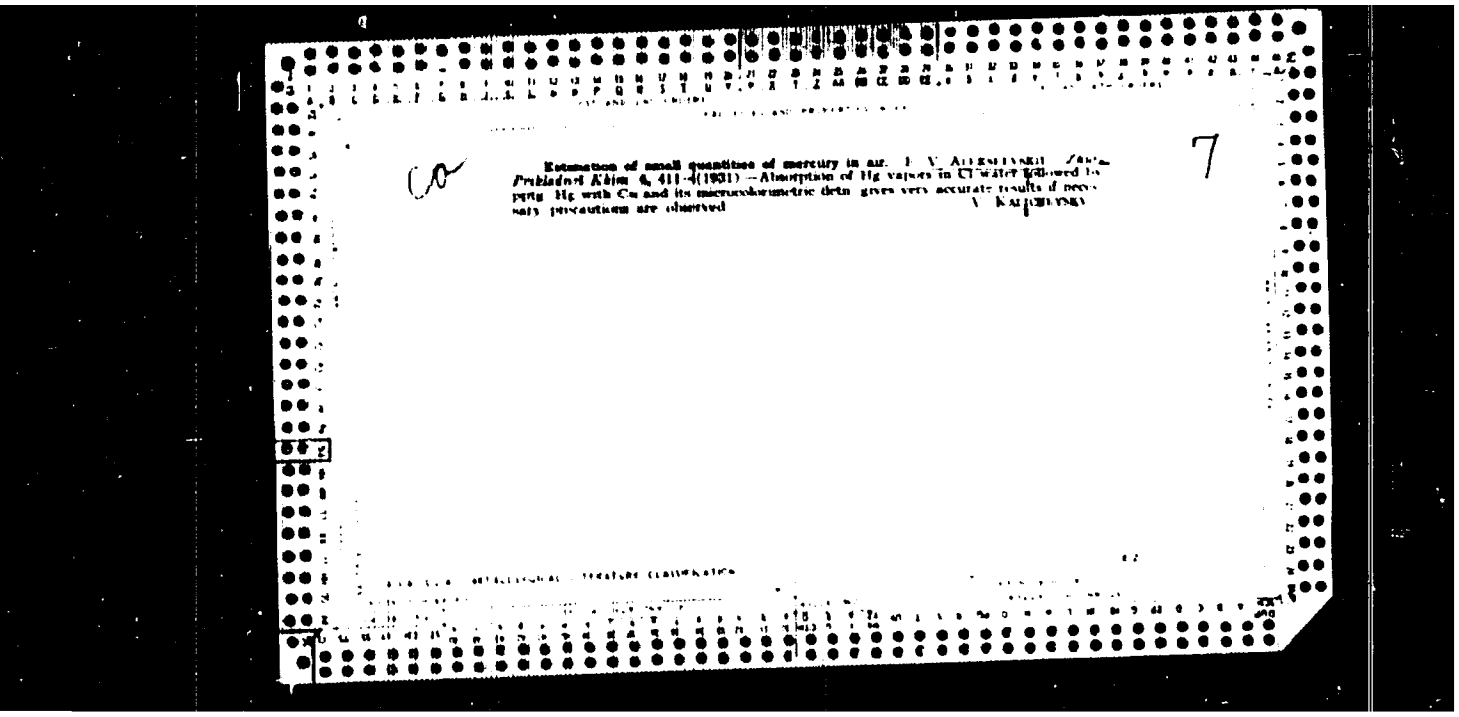
PROCESSES AND PROPERTIES INDEX

CA

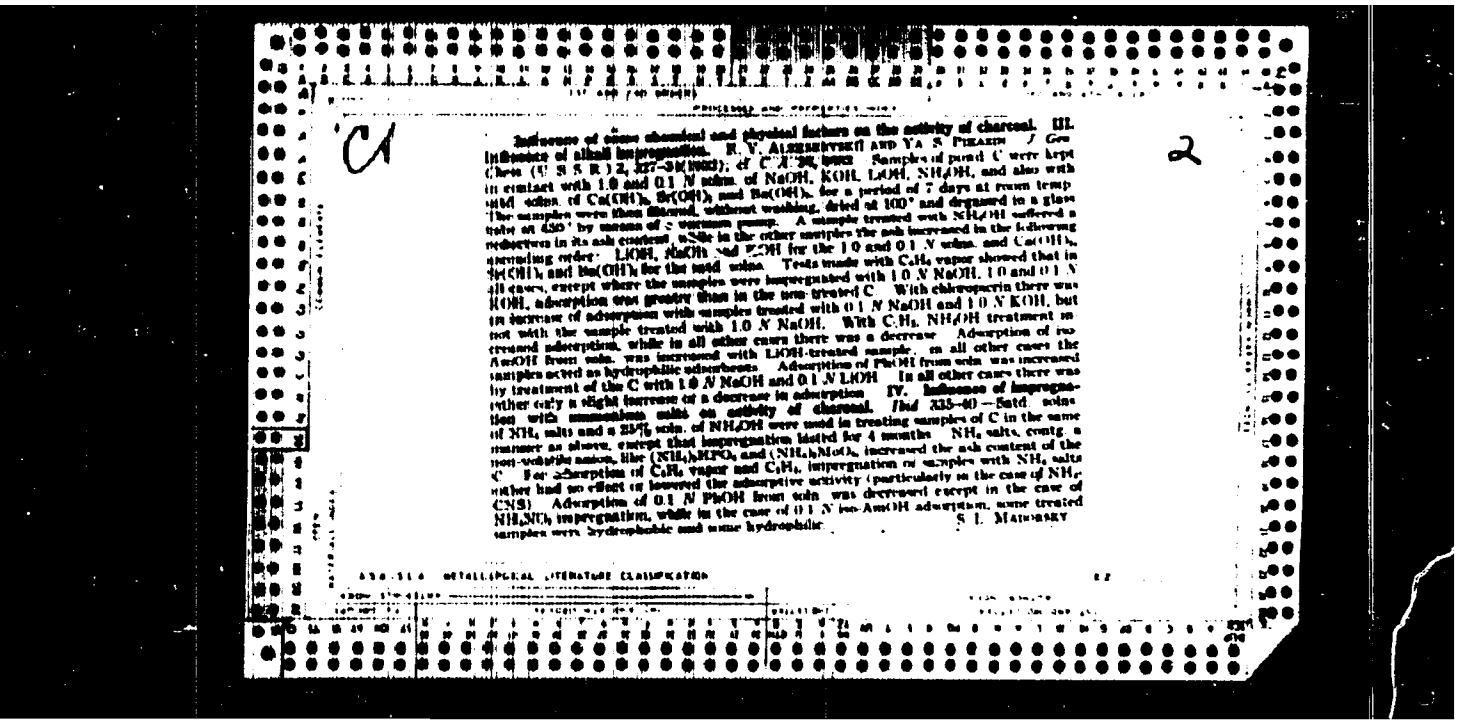
Preparation of an active palladium catalyst for industrial purposes. E. V. Alek-sandrovich, A. P. Mushkin and I. D. Makarov. *Zhur. Prikladnoi Khim.* 3, 663 (1930). Asbestos cloth soaked for 12–15 hrs. in a soln. of $PdCl_2$ in a 2 N HCl soln. [illegible] dried on the water bath and reduced for 12 hrs. in an elec. furnace in an atm. of H satd. with moist HCHO, then cooled in the presence of H_2 and washed first with hot distd. water and then for 12 hrs. in cold water. Washing with water is highly important in activating the catalyst. Expts. show that the initial reaction velocity is always very slow, particularly if little Pd is deposited on the cloth. With [illegible] or less Pd by wt. the catalyst must be heated. The best results are obtained with [illegible] Pd but in com. prac tice 2% Pd is the economic limit. Porous asbestos cloth should be used. V. K.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION





Estimation of small quantities of mercury in air. I. V. Arkhangel'skii. *Zavodskaya Laboratoriya* 4, 411-4(1931).—Absorption of Hg vapors in Cl water followed by ppta. Hg with Cu and its microcolorimetric detn. gives very accurate results if necessary precautions are observed. V. Karpinskaya

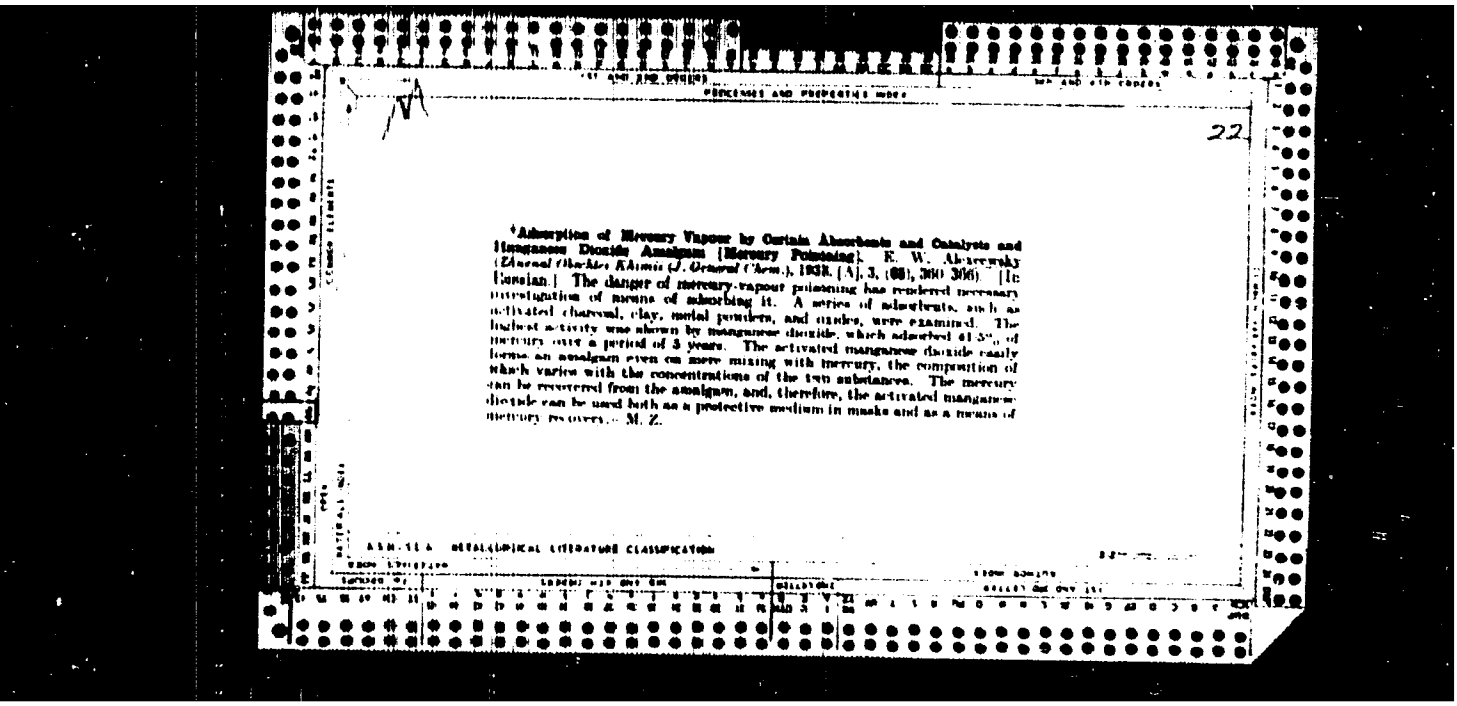


C1

2

Influence of some chemical and physical factors on the activity of charcoal. III. Influence of alkali impregnation. R. V. Alekseevskii and Ya. S. Pikaev. *J. Gen. Chem. (U.S.S.R.)* 2, 327–30(1932); *cf. C.A.* 26, 5993. Samples of purified C were kept in contact with 1.0 and 0.1 *N* solns. of NaOH, KOH, LiOH, NH_4OH, and also with satd. solns. of $Ca(OH)_2$, $Sr(OH)_2$ and $Ba(OH)_2$ for a period of 7 days at room temp. The samples were then filtered, without washing, dried at 100° and degassed to a glass tube at 450° by means of a vacuum pump. A sample treated with NH_4OH suffered a reduction in its ash content, while in the other samples the ash increased in the following ascending order: LiOH, NaOH and KOH for the 1.0 and 0.1 *N* solns. and $Ca(OH)_2$, $Sr(OH)_2$ and $Ba(OH)_2$ for the satd. solns. Tests made with C_6H_6 vapor showed that in all cases, except where the samples were impregnated with 1.0 *N* NaOH, 1.0 and 0.1 *N* KOH, adsorption was greater than in the non-treated C. With chloropicrin there was an increase of adsorption with samples treated with 0.1 *N* NaOH and 1.0 *N* KOH, but not with the sample treated with 1.0 *N* NaOH. With C_6H_6, NH_4OH treatment as compared adsorption, while in all other cases there was a decrease. Adsorption of no. AmOH from soln. was increased with LiOH-treated sample, in all other cases the samples acted as hydrophilic adsorbents. Adsorption of PhOH from soln. was increased by treatment of the C with 1.0 *N* NaOH and 0.1 *N* LiOH. In all other cases there was either only a slight increase or a decrease in adsorption. IV. Influence of impregnation with ammonium salts on activity of charcoal. *Ibid* 335–40.—Satd. solns. of NH_4 salts and a 25% soln. of NH_4OH were used in treating samples of C in the same manner as above, except that impregnation lasted for 4 months. NH_4 salts, contg. a non-volatile anion, like $(NH_4)_3PO_4$ and $(NH_4)_2MoO_4$, increased the ash content of the C. For adsorption of C_6H_6 vapor and C_2H_4, impregnation of samples with NH_4 salts either had no effect or lowered the adsorptive activity (particularly in the case of NH_4CNS). Adsorption of 0.1 *N* PhOH from soln. was decreased except in the case of NH_4NO_3 impregnation, while in the case of 0.1 *N* iso-AmOH adsorption, some treated samples were hydrophobic and some hydrophilic. S. L. Madorsky

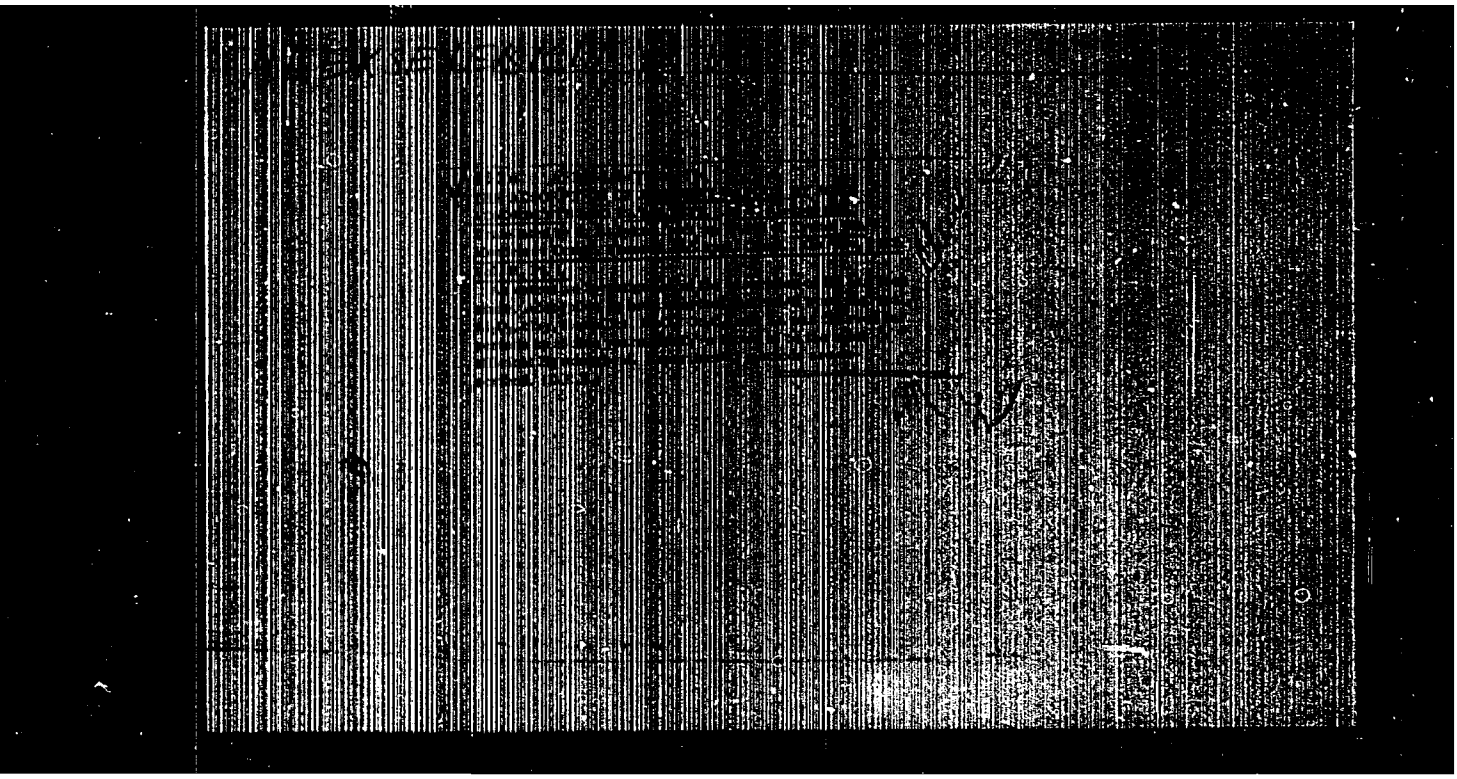
A50-51A METALLURGICAL LITERATURE CLASSIFICATION



22

Absorption of Mercury Vapour by Certain Absorbents and Catalysts and Manganese Dioxide Amalgam [Mercury Poisoning]. E. W. Akaevenky (*Zhurnal Obshtei Khimii (J. General Chem.)*, 1938, [A], 3, (66), 300–306). [In Russian.] The danger of mercury-vapour poisoning has rendered necessary investigation of means of absorbing it. A series of adsorbents, such as activated charcoal, clay, metal powders, and oxides, were examined. The highest activity was shown by manganese dioxide, which adsorbed 41·5% of mercury over a period of 3 years. The activated manganese dioxide easily forms an amalgam even on mere mixing with mercury, the composition of which varies with the concentrations of the two substances. The mercury can be recovered from the amalgam, and, therefore, the activated manganese dioxide can be used both as a protective medium in masks and as a means of mercury recovery.—M. Z.

A.S.M.-T.I.B. METALLURGICAL LITERATURE CLASSIFICATION



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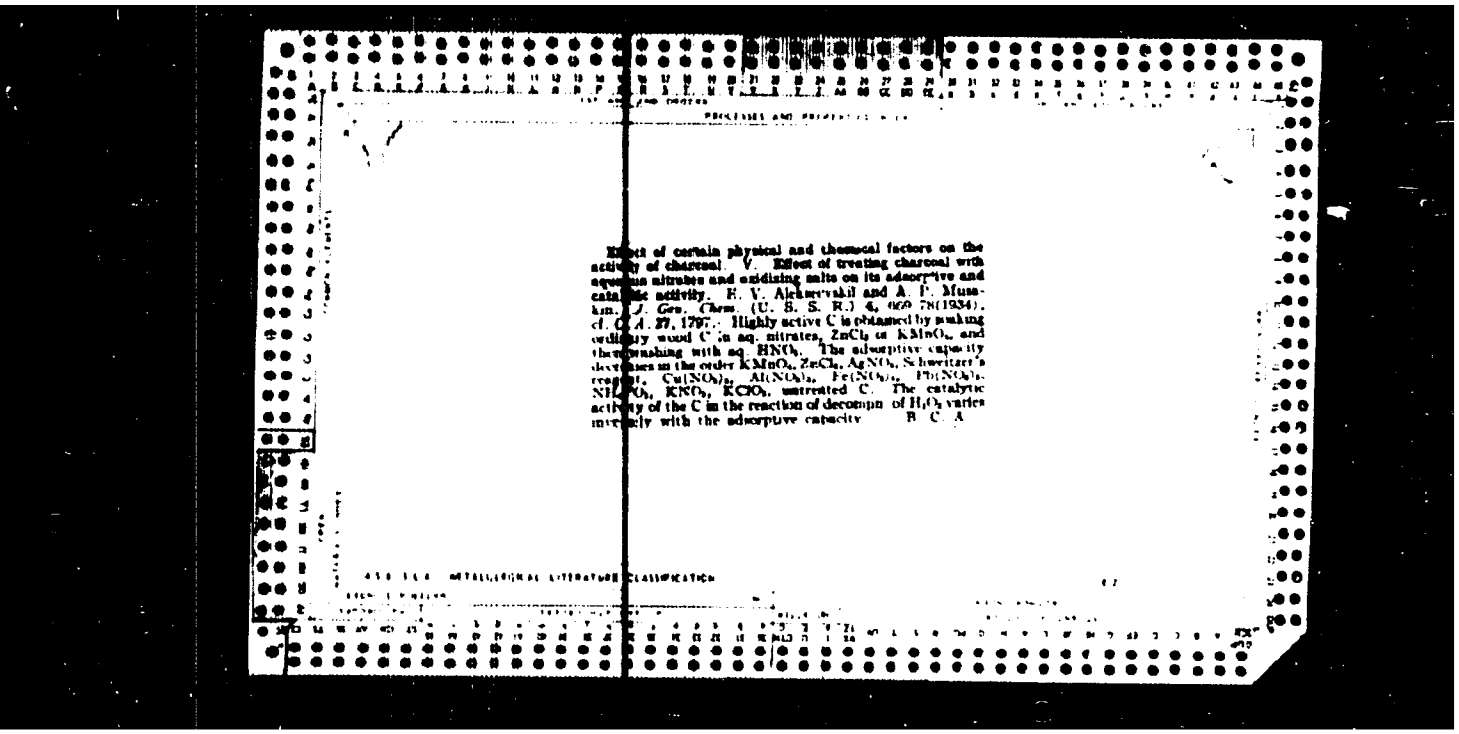


Effect of certain physical and chemical factors on the activity of charcoal. V. Effect of treating charcoal with aqueous nitrates and oxidising salts on its adsorptive and catalytic activity. E. V. Alekseevskii and A. P. Mushkin. *J. Gen. Chem.* (U. S. S. R.) 4, 669-78(1934). cf. *C. A.* 27, 1797. Highly active C is obtained by soaking ordinary wood C in aq. nitrates, $ZnCl_2$ or $KMnO_4$, and then washing with aq. HNO_3. The adsorptive capacity decreases in the order $KMnO_4$, $ZnCl_2$, $AgNO_3$, Schweitzer's reagent, $Cu(NO_3)_2$, $Al(NO_3)_3$, $Fe(NO_3)_3$, $Pb(NO_3)_2$, NH_4NO_3, KNO_3, $KClO_3$, untreated C. The catalytic activity of the C in the reaction of decompn of H_2O_2 varies inversely with the adsorptive capacity. B. C. A.

PROCESSES AND PROPERTIES INDEX

Investigation of the sorptive and catalytic properties of active manganese dioxide with respect to vapors and gases. R. V. Alekseevskii and Z. R. Gol'braikh. J. Gen. Chem. (U. S. S. R.) 6, [illegible] 47(1936). According to the nature of the adsorbent there can take place adsorptive, chemosorptive and contact-catalytic processes during sorption in the case of the active MnO_2. The static adsorptive activity of MnO_2 with the vapors of some org. compds. was detd. and the increase of adsorption with the increase of mol. wt. of the homologs was shown. The isotherms of adsorption of CCl_4 and C_2H_5Cl were investigated. These were characterized by sharp curves showing the beginning capillary condensation. The chemosorptive character of the behavior of aniline toward MnO_2 accompanied by the oxidation of aniline to azobenzene was ascertained. The dynamic activity of granulated MnO_2 to the vapors of aniline was detd. and the chemosorptive character of benzonitrile vapors was shown with respect to active MnO_2, which at the same time effected a hydration of the benzonitrile to benzamide. The adsorption of NH_3 by the active MnO_2 at 0°, 50°, 100° and 200° was also investigated.

V. D. Karnenko

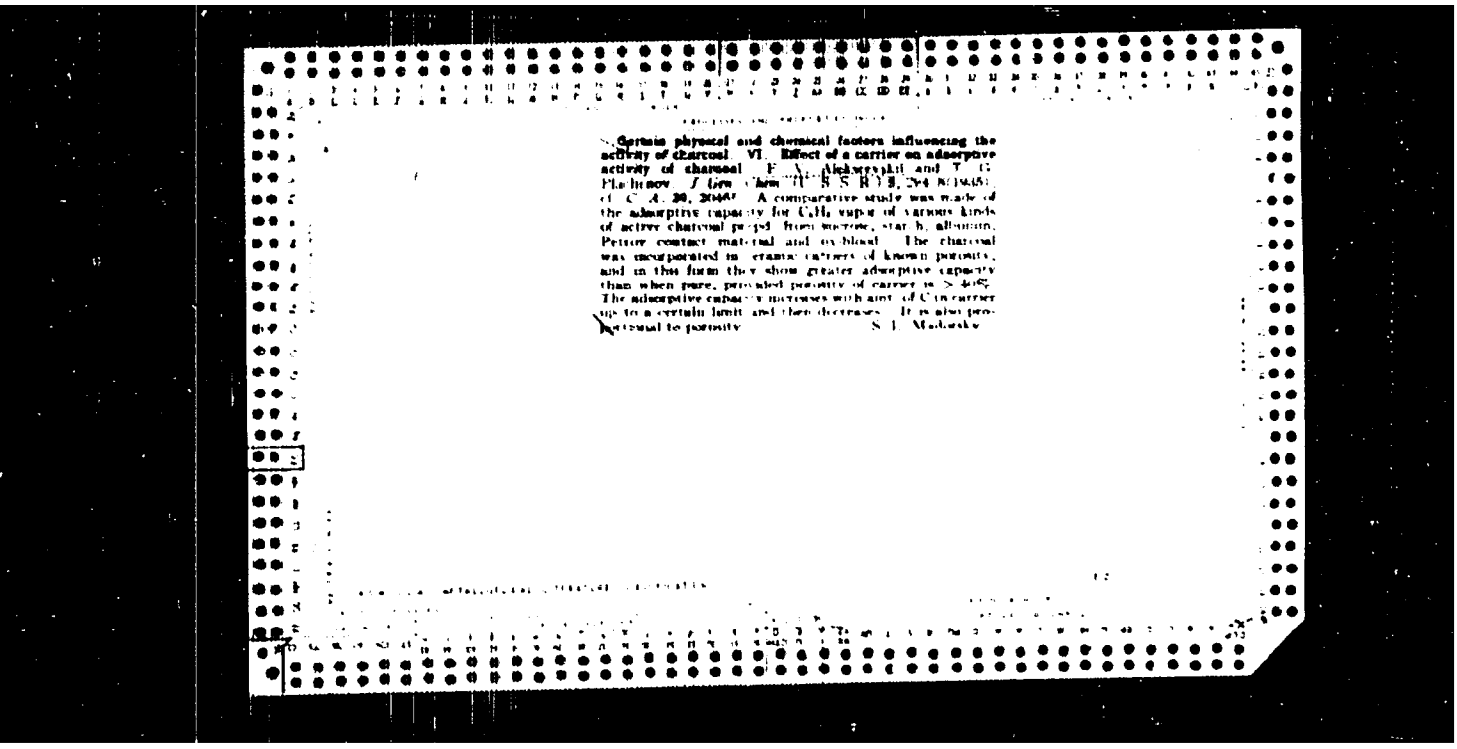
METALLURGICAL LITERATURE CLASSIFICATION

CA

18

Adsorption of mercury vapors by some adsorbents and catalysts. B. V. Aleksandrovskii. *Trans. VI Mendeleev Congr. 1932* 2, I, 24; 9 (1935). The following adsorbents were investigated: Merck animal charcoal, Kahlbaum active C, American "Charcoal" from St. Louis, active alumina, "Adelheim" clay, hopcalite, active MnO_2, Co oxide, zinc dust. After 8 hrs.' exposure the best results were obtained with active MnO_2, which can be regarded as a specific adsorbent for Hg vapor (81.5% of the Hg vapor was adsorbed). Active alumina and "Adelheim" clay did not adsorb the vapor. The adsorbing power of different kinds of charcoal was very low (not over 0.1% of vapor adsorbed). Hopcalite, Co oxide and zinc dust adsorbed 7.92, 1.65 and 0.017%, resp. F. E. S.

METALLURGICAL LITERATURE CLASSIFICATION



Certain physical and chemical factors influencing the activity of charcoal. VI. Effect of a carrier on adsorptive activity of charcoal. F. V. Alekseyshil and T. G. Plachenov. *J. Gen. Chem. (U.S.S.R.)* 9, 294 (1939); cf. *C. A.* 30, 2046⁹. A comparative study was made of the adsorptive capacity for CCl_4 vapor of various kinds of active charcoal prepd. from sucrose, starch, albumin, Petrov contact material and ox blood. The charcoal was incorporated in ceramic carriers of known porosity, and in this form they show greater adsorptive capacity than when pure, provided porosity of carrier is >40%. The adsorptive capacity increases with amt. of C in carrier up to a certain limit and then decreases. It is also proportional to porosity. S. L. Madorsky

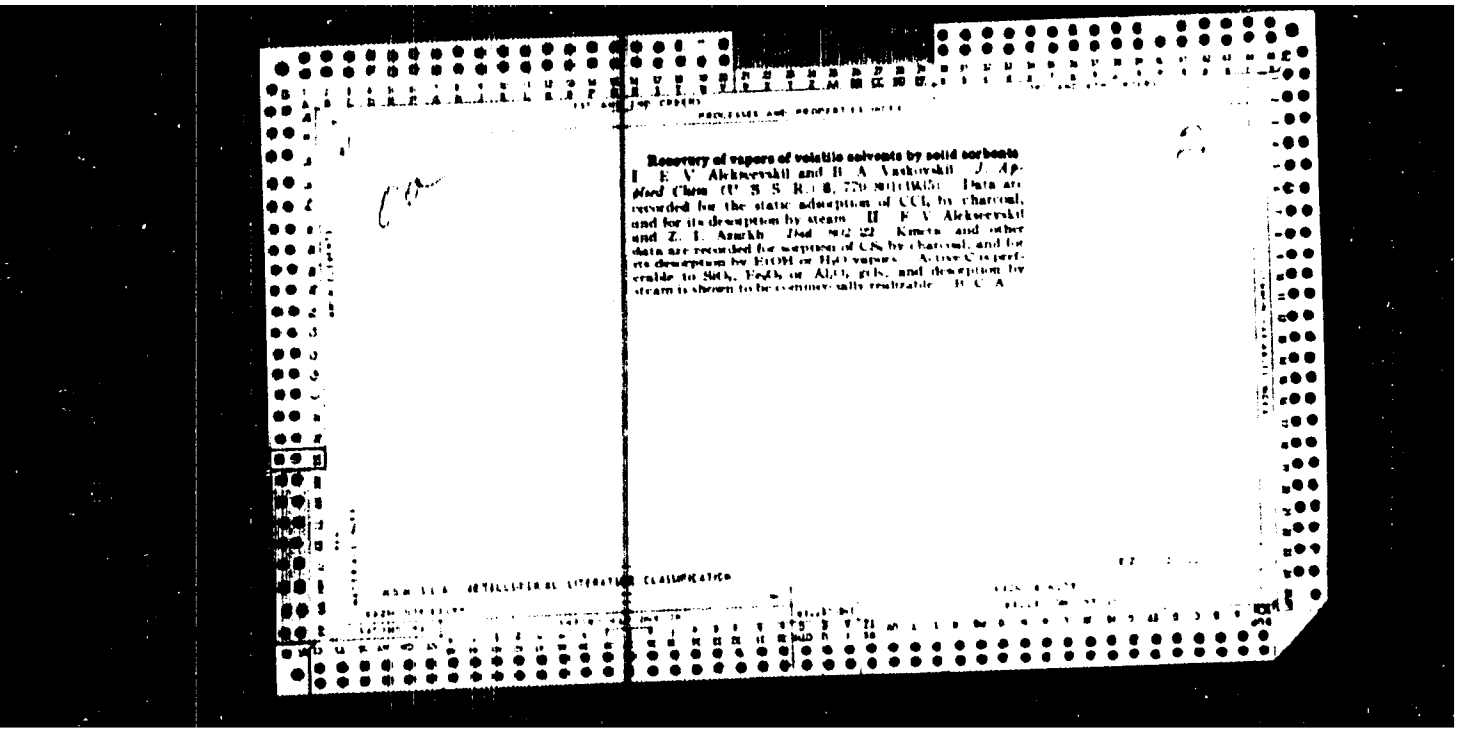
Adsorption of water vapor from air current by inorganic gels. R. V. Alekseevskii and F. Yu. Rachinskii. *J. Gen. Chem.* (U. S. S. R.) 5, 290-300(1935).—A. and R. undertook to det. the comparative efficiencies of inorg. gels when used in a drying train composed of 4 Patrick tubes in series through which air contg. 2-10 mg. H_2O per l. was passed. The gain in wt. of each tube was detd. at intervals, and Shilov's equation (Dubinin, *Physicochem. Principles of Sorption Technic*) applied to the data. Willstaetter's alumogels had higher dynamic activity than SiO_2 gels, while Fe_2O_3 gel proved inferior to either of the above. Since adsorption by inorg. gels is probably followed by diffusion of H_2O into the granules and chem. interaction, the findings were checked by a method that did not require interruptions for weighing. Moist air contg. 1% CO was passed through a tube contg. the gel, then through another one charged with hopcalite (cf. C. A. 26, 4656). Alumogels protected hopcalite from moisture longer than did the SiO_2 gels. The static adsorption activity (measured over H_2SO_4 in a desiccator) also proved greater for alumogels than for SiO_2 gels when H_2O vapor pressure was below 10 mm. SiO_2 gels were more active than alumogels at 12.8 mm. The activity of the gels varied with the method of prepn., hence depended on their structure. H. S.

METALLURGICAL LITERATURE CLASSIFICATION

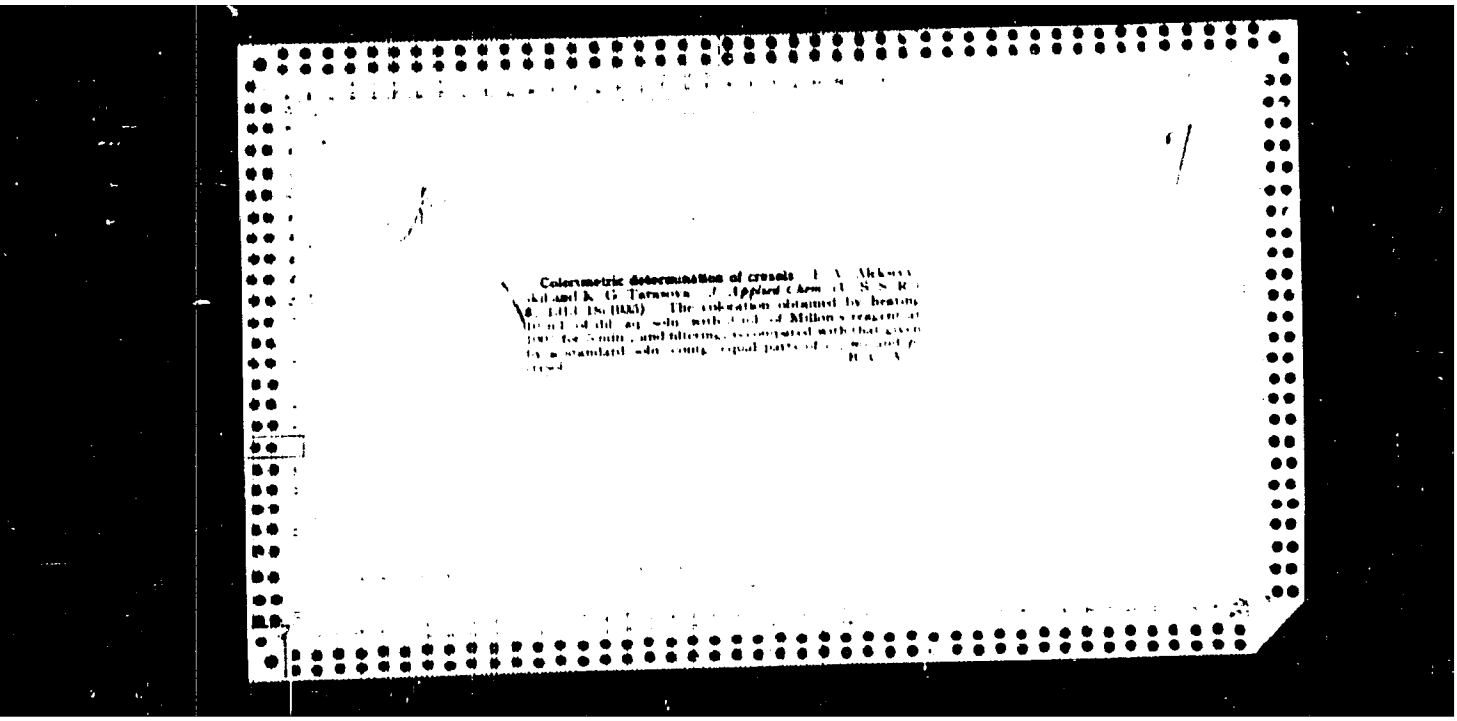
C.P.

12

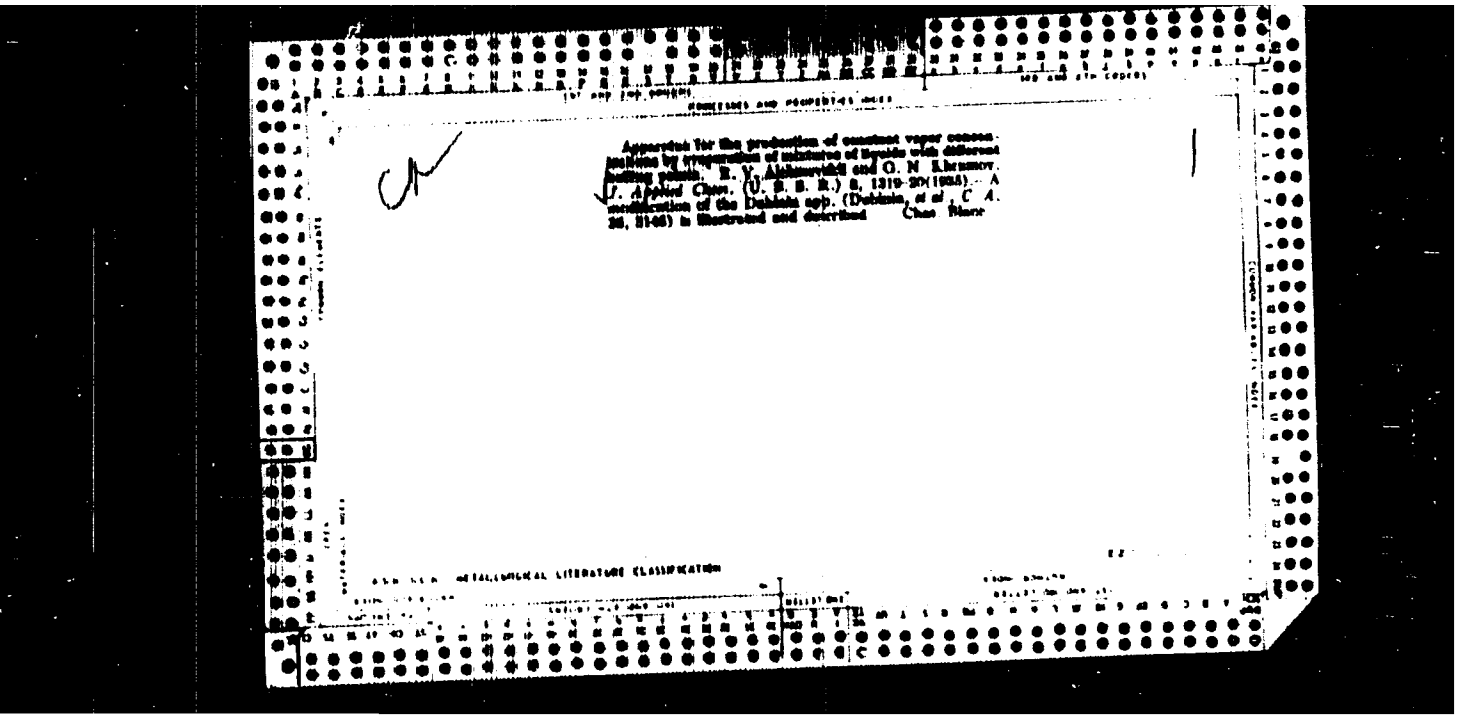
Determination of the moment of penetration of vapors through a sorbent. F. V. Alekseevskii and P. I. Azarkh. J. Applied Chem. (U. S. S. R.) 8, 327-9(in German 329) (1935). The moment of penetration of a gas sorbent is detd. by connecting the app. to an inverted funnel projecting into a tared cylinder provided with a glass sieve charged with dry charcoal, suspended from the beam of a balance. Before the expt., this cylinder must be at equil., which is disturbed as soon as gas or vapor begins to pass through the sorption tube, since the former will be adsorbed by the charcoal, thus disturbing the equil. of the balance. A. A. Bochtlingk



Recovery of vapors of volatile solvents by solid sorbents
I. E. V. Alekseevskii and B. A. Vaskovskii. *J. Applied Chem.* (U.S.S.R.) 8, 770-80(1935). Data are recorded for the static adsorption of CCl_4 by charcoal, and for its desorption by steam. II. E. V. Alekseevskii and Z. I. Azarkh. *Ibid.* 972-82. Kinetic and other data are recorded for sorption of CS_2 by charcoal, and for its desorption by H_2O or H_2O vapors. Active C is preferable to SiO_2, Fe_2O_3 or Al_2O_3 gels, and desorption by steam is shown to be commercially realizable. B. C. A.



Colorimetric determination of cresols [illegible]



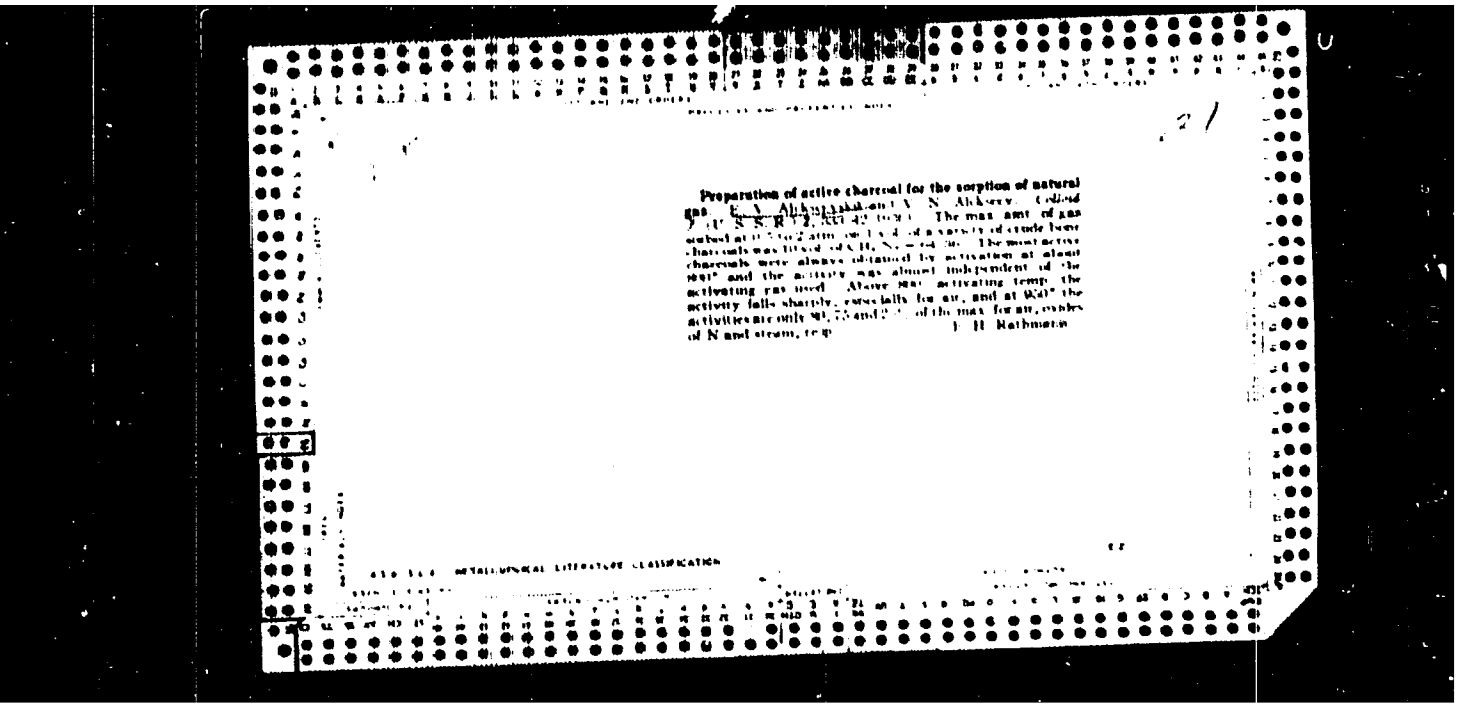
Apparatus for the production of constant vapor concentrations by evaporation of substances of liquids with different boiling points. B. V. Alekseevskii and G. N. Likhanov. J. Applied Chem. (U. S. S. R.) 8, 1319-20(1935). A modification of the Dubinin app. (Dubinin, et al., C. A. 30, 3146) is illustrated and described. Chas. Blanc

PROCESSES AND PROPERTIES INDEX

BC B-II-1

Recovery of the vapour–gas mixture evolved in the production of benzyl chloride. K. V. Alekseevski and S. F. Krasavin (J. Chem. Ind. Russ., 1935, 12, 836—840).—Mixtures of HCl 84·5, Cl_2 10·9, and PhMe 4·6% undergo adsorption on birch-C to form a mixture of isomerides of C_6H_4MeCl (I), $C_6H_3MeCl_2$ (II), and $C_6H_4Cl\cdot CO_2H$, on SiO_2 gel to yield only (I) and (II), and on $Al(OH)_3$ to form chiefly $C_6H_3MeCl_2$. Analogous results are obtained with air–Cl_2–PhMe mixtures. R. T.

METALLURGICAL LITERATURE CLASSIFICATION



Preparation of active charcoal for the sorption of natural

The max amt of gas

The most active

obtained by activation at about

and the activity was almost independent of the

activating gas used. Above that activating temp. the

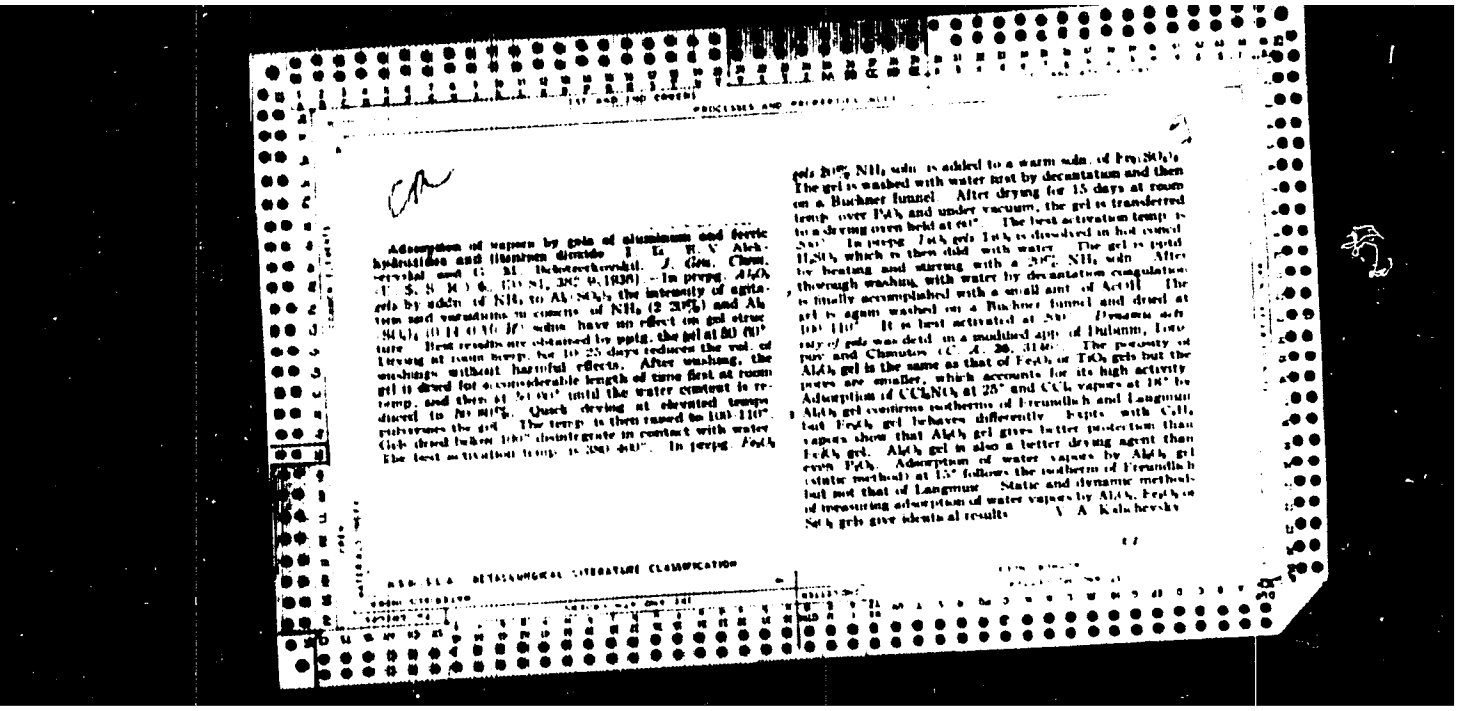
activity falls sharply, especially for air, and at 900° the

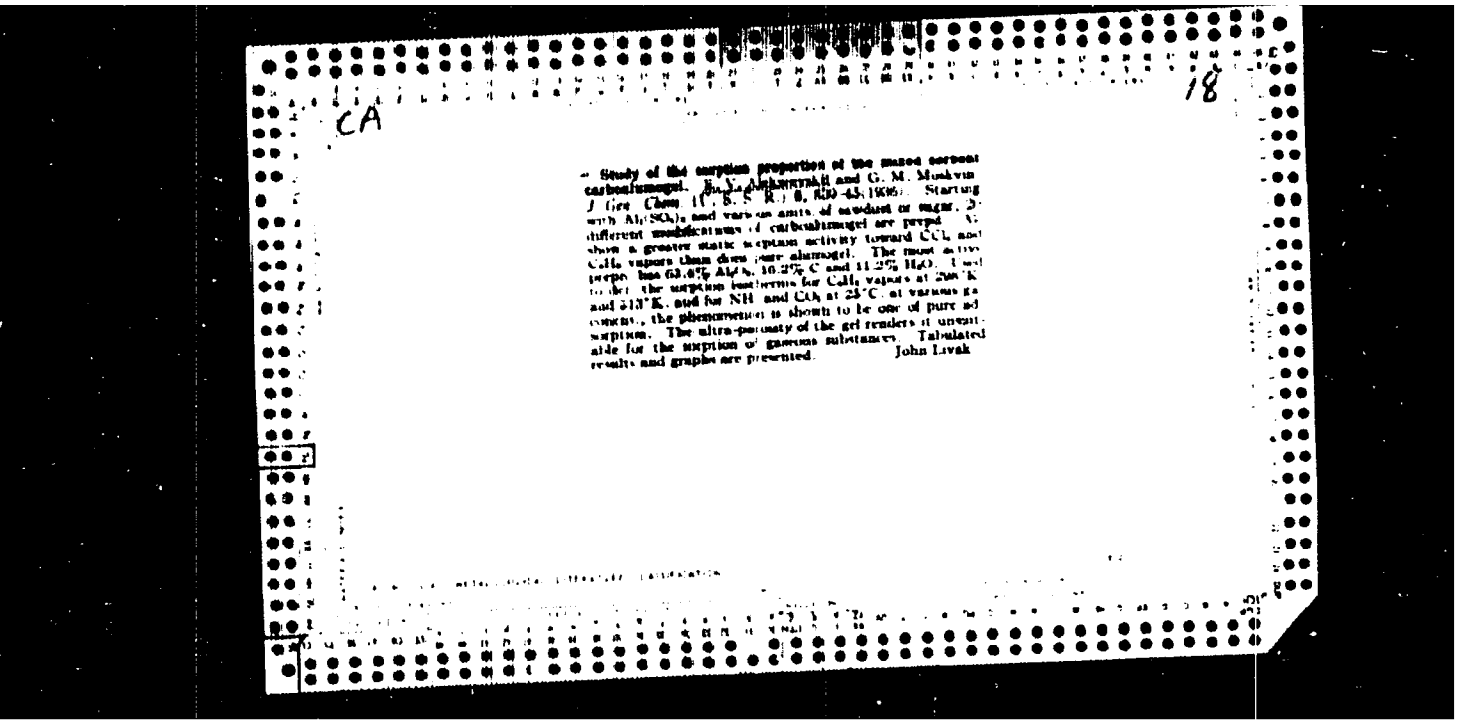
activities are only 30, 55 and [illegible] of the max for air, steam

of N and steam, resp.

[illegible] H Rathmann

METALLURGICAL LITERATURE CLASSIFICATION

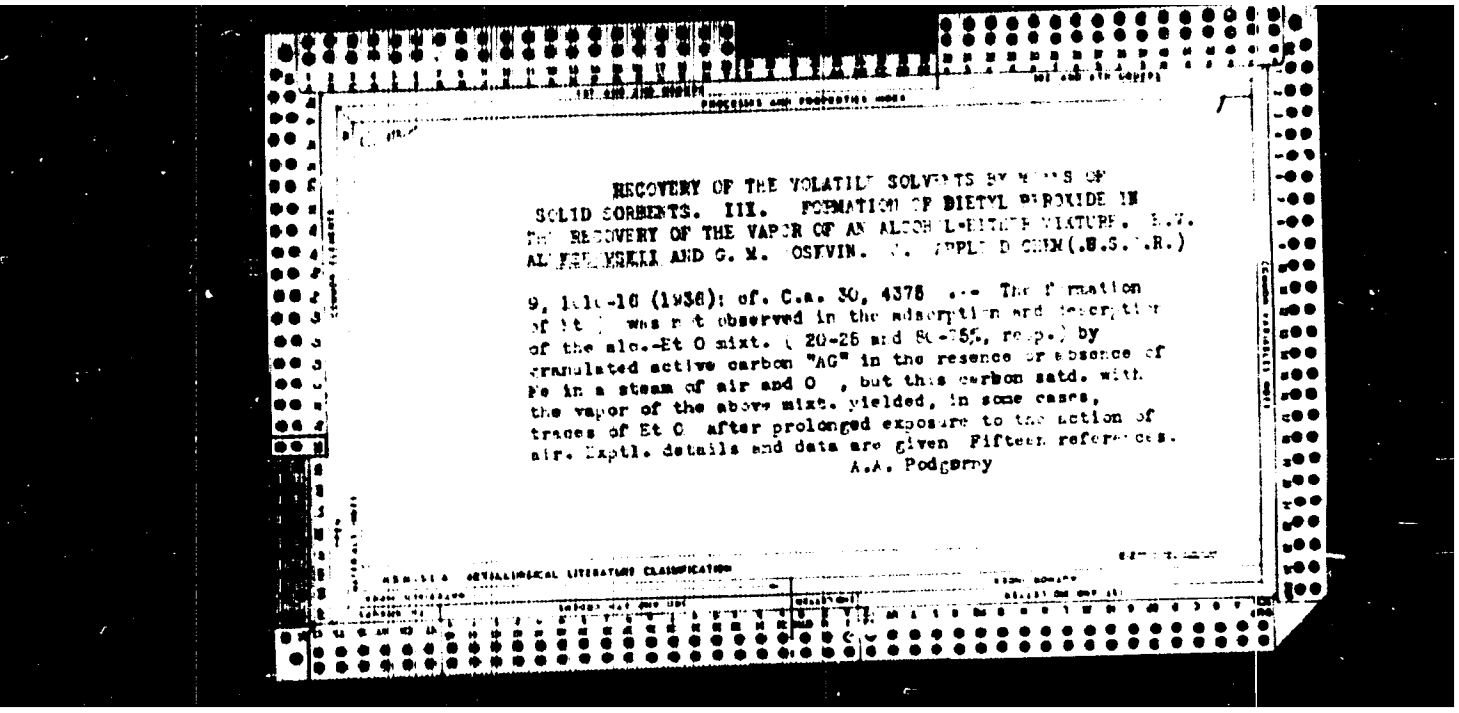




CA

18

– Study of the sorption properties of the mixed aerosol carbosilicagel. [illegible] and G. M. Mushkin. J Gen Chem (U.S.S.R.) 6, 830-45 (1936). Starting with $Al_2(SO_4)_3$ and various amts. of sawdust or sugar, 2 different modifications of carbosilicagel are prepd. A shows a greater static sorption activity toward CCl_4 and CaH_6 vapors than does pure silicagel. The most active prepn. has 63.6% Al_2O_3, 10.2% C and 11.2% H_2O. Used to det. the sorption isotherms for CaH_6 vapors at 298°K and 313°K. and for NH and CO_2 at 25°C. at various gas concns., the phenomenon is shown to be one of pure ad sorption. The ultra-porosity of the gel renders it unsuit able for the sorption of gaseous substances. Tabulated results and graphs are presented. John Livak



RECOVERY OF THE VOLATILE SOLVENTS BY MEANS OF SOLID SORBENTS. III. FORMATION OF DIETYL PEROXIDE IN THE RECOVERY OF THE VAPOR OF AN ALCOHOL-ETHER MIXTURE. B.V. ALEKSEEVSKII AND G. M. OSEVIN. U. Appl. Chem. (U.S.S.R.)

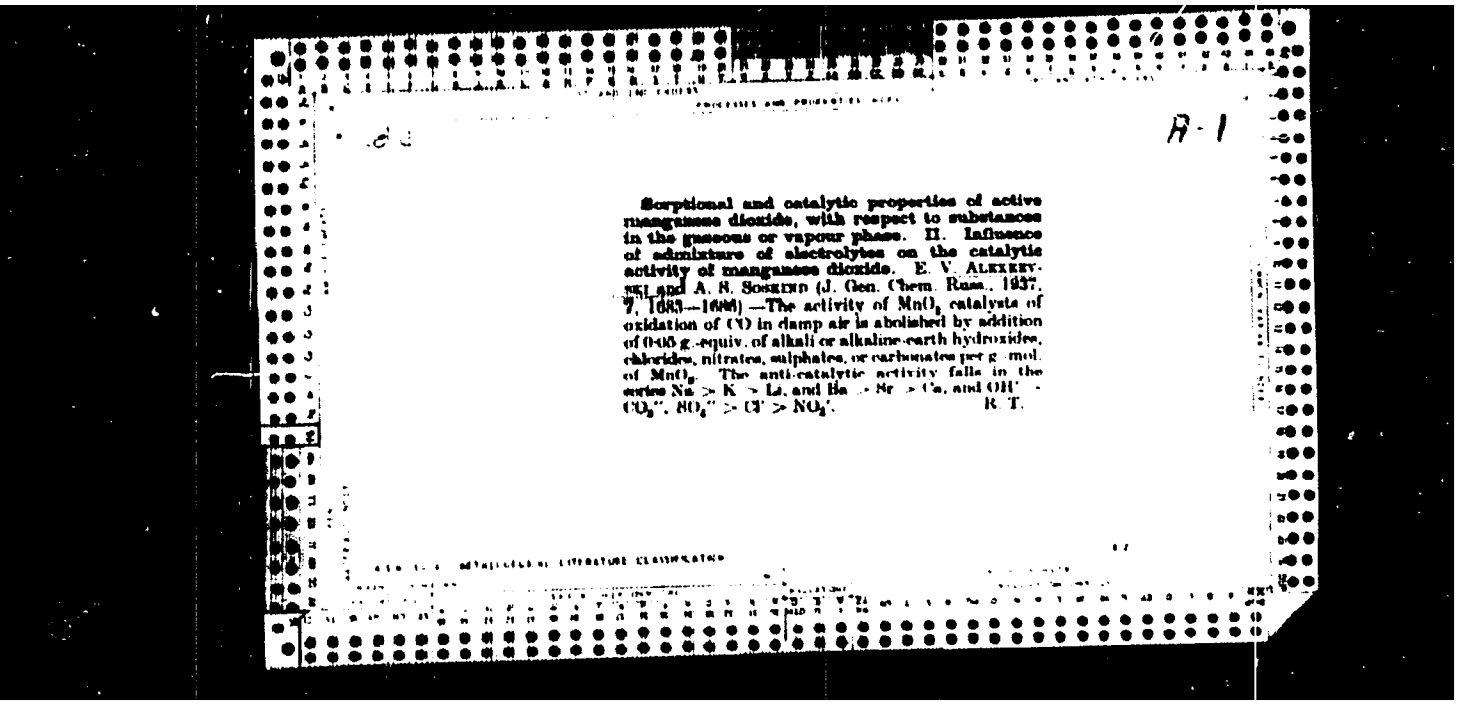
9, 1616-18 (1936); cf. C.A. 30, 4378 .-- The formation of Et O was not observed in the adsorption and desorption of the alc.-Et O mixt. (20-25 and 80-85%, resp.) by granulated active carbon "AG" in the presence or absence of Fe in a steam of air and O , but this carbon satd. with the vapor of the above mixt. yielded, in some cases, traces of Et O after prolonged exposure to the action of air. Exptl. details and data are given. Fifteen references.

A.A. Podgorny

PROCESSES AND PROPERTIES

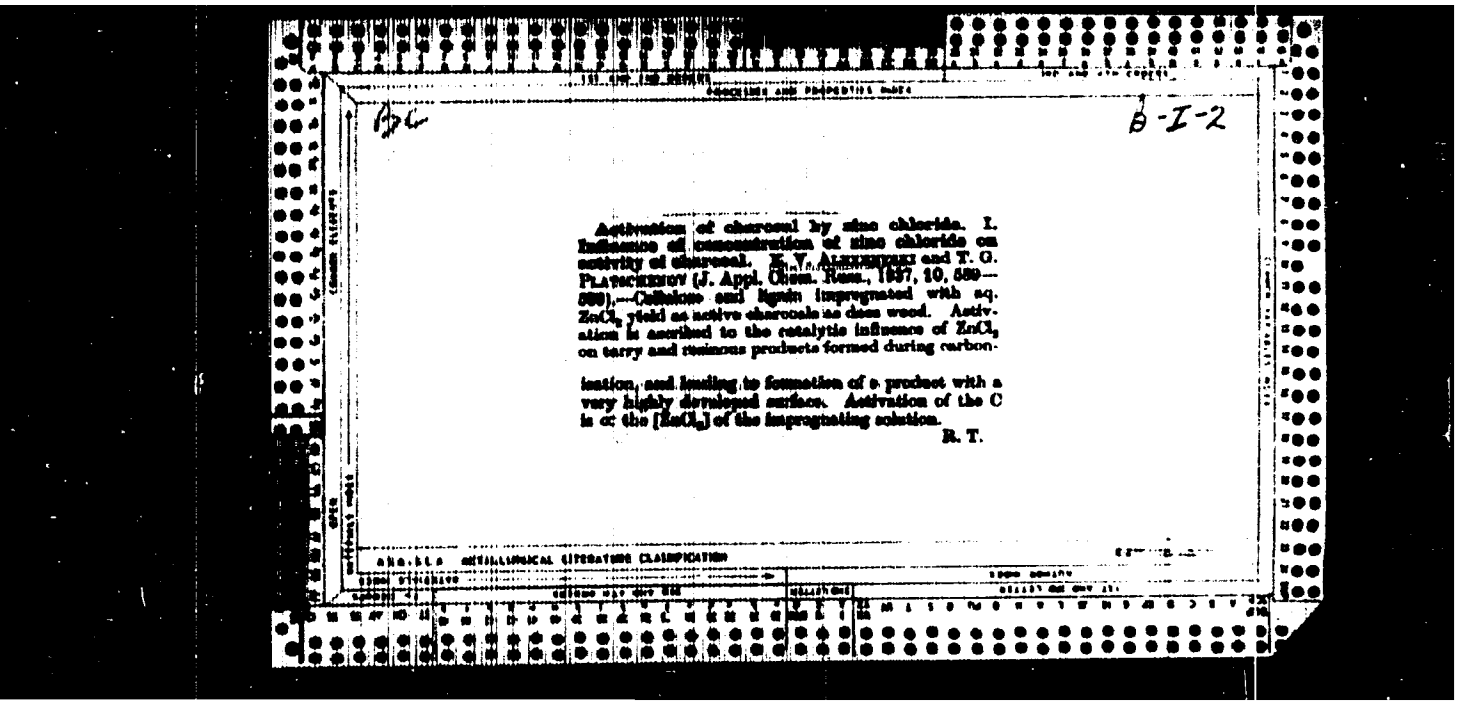
Sorption and desorption of oxides of nitrogen (at low concentration) by activated carbon. E. V. Alekseevskii, G. M. Moskvin and L. Ya. Pudoshp. *J. Applied Chem.* (U. S. S. R.) 9, 1000-12 (in German 1813)(1936). - NO_2 is sorbed from an air stream best by activated birch charcoal No. 14. Birch charcoal No. 12, carbon AG and peat carbon also were tested. The concn. of NO_2 in the air stream during the expts. was 1.5-3.5 mg./l., the velocity of the stream was 1.5 l./sq. cm. per min., and temp. 21°. Dynamics of sorption are given. In the desorption of NO_2 by steam, heated to 120-150°, the adsorbed NO_2 is liberated as NO, together with noticeable amts. of CO_2, which was formed during sorption and desorption of NO_2 on the surface of the charcoal, lowering its dynamic activity. The percentage of charcoal oxidized during the process was 0.5% by wt. The best regeneration of charcoal was accomplished at 600° in steam. Fifteen references. A. A. Podgorny

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



A-1

Sorptional and catalytic properties of active manganese dioxide, with respect to substances in the gaseous or vapour phase. II. Influence of admixture of electrolytes on the catalytic activity of manganese dioxide. E. V. ALEXEEV-SKI and A. S. SOSKIN (J. Gen. Chem. Russ., 1937, 7, 1683—1688).—The activity of MnO_2 catalysts of oxidation of CO in damp air is abolished by addition of 0·05 g.-equiv. of alkali or alkaline-earth hydroxides, chlorides, nitrates, sulphates, or carbonates per g.-mol. of MnO_2. The anti-catalytic activity falls in the series $Na^+ > K^+ > Li^+$, and $Ba^{++} > Sr^{++} > Ca^{++}$, and $OH^- > CO_3^{--}$, $SO_4^{--} > Cl^- > NO_3^-$. R. T.



B-I-2

Activation of charcoal by zinc chloride. I. Influence of concentration of zinc chloride on activity of charcoal. K. V. ALEKSEEVSKII and T. G. PLATONCHENOV (J. Appl. Chem. Russ., 1937, 10, 589—599).—Cellulose and lignin impregnated with aq. $ZnCl_2$ yield an active charcoal as does wood. Activation is ascribed to the catalytic influence of $ZnCl_2$ on tarry and resinous products formed during carbonisation, and leading to formation of a product with a very highly developed surface. Activation of the C is of the $[ZnCl_2]$ of the impregnating solution.

R. T.

18

Sorption activity of Russian clays for vapors. Optimum conditions for the thermal treatment of clays. E. V. Alekseevskii and V. K. Serebrenyi. *J. Applied Chem.* (U. S. S. R.) 10, 787-96 (in French 796) (1937).—Thermal treatment of Russian clays and its influence upon the sorption ability of clays for vapors are investigated. The optimum temp. of thermal activation of clays is 120°. The Crimean "argil" and "gumbrin" have the highest static sorption activity. Clays, preheated to 120°, have the highest capacity for sorption of Cl, and the above 2 clays are the most active. Clays, activated by heat, are only slightly active sorbents for activation for org. vapors. The temp. of 120° is also an optimum temp. for activation of the imported clays (fuller's earth and gremoil) used for sorption of org. vapors. Seven Russian clays were investigated, their chem. compns. are given and results are tabulated and plotted. Sixteen references.

A. A. Podgorny

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

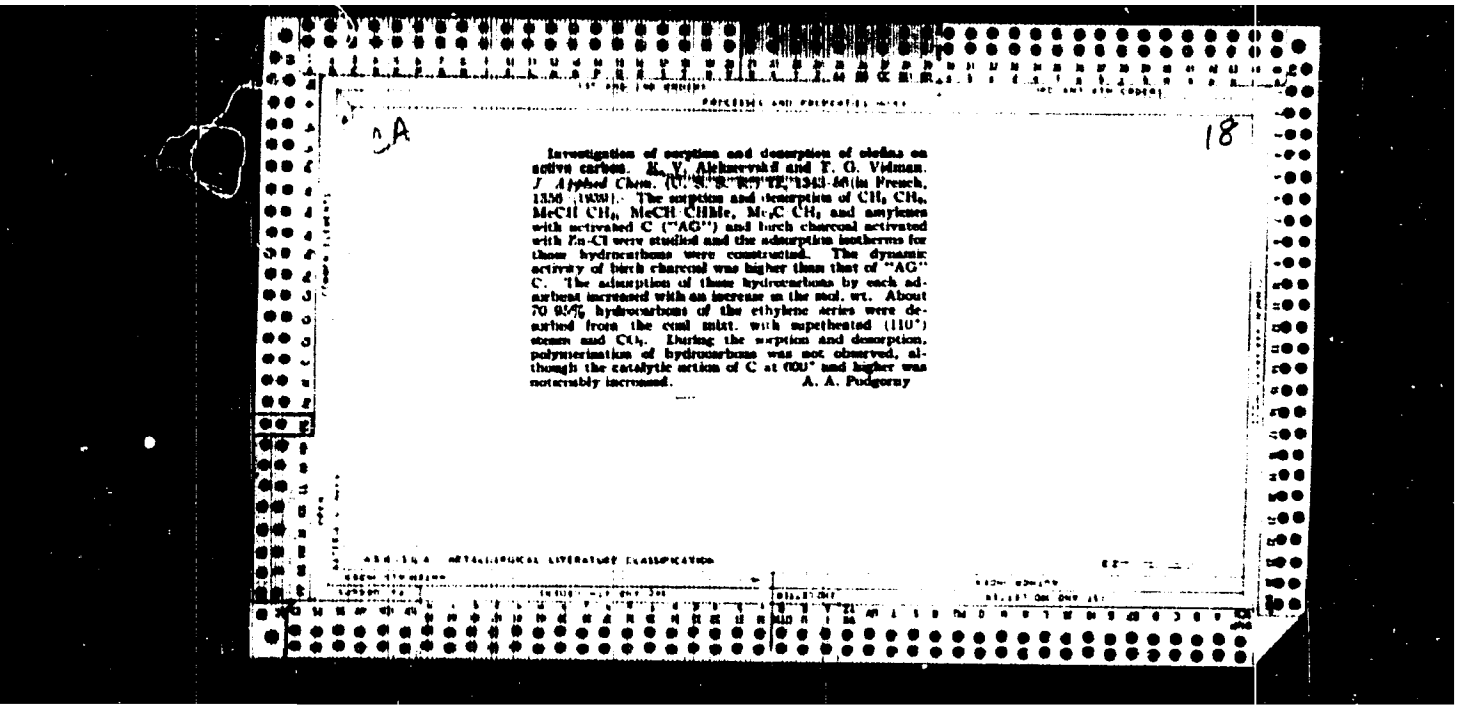
CA

1

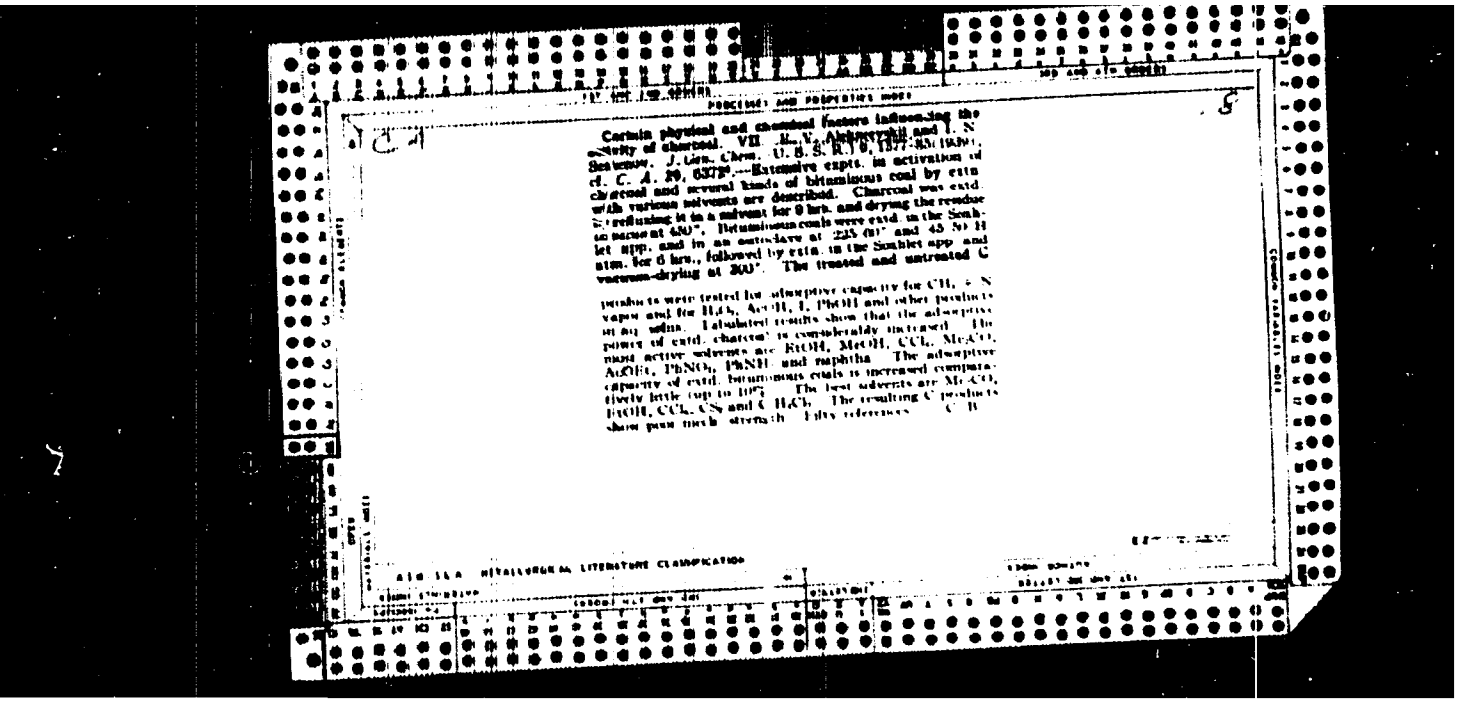
Recovery of the volatile solvents by means of solid sorbents. IV. Sorption and desorption of chlorine-containing organic solvents by active carbon. F. A. Alekseevskii and Ya. D. Musin. *J. Applied Chem.* (U.S.S.R.) 12, 701-19 (in German, 719) (1939); cf. C. A. 31, 2047. — The adsorption isobars for $(CH_2Cl)_2$, CHCl CCl, $CHCl_3$ and CCl_4 by granulated active carbon "AG," birch charcoal (steam-activated) and fruit-pit charcoal (activated by $ZnCl_2$), were obtained and their adsorption isotherms were calcd. for 20°. The first and last adsorbent produced the best results. An investigation of dynamics of adsorption and catalytic action of carbon on the decompn. of the Cl-contg. org. compds. showed that it is practicable to recover the above solvents by adsorption with active carbon and desorption with superheated steam. 26 references.

A. A. Podgorny

METALLURGICAL LITERATURE CLASSIFICATION



Investigation of sorption and desorption of olefins on active carbon. K. V. Alekseevskii and T. G. Vilman. *J. Applied Chem.* (U.S.S.R.) 12, 1343-56 (in French, 1356) (1939).—The sorption and desorption of CH_4, CH_3, $MeCH:CH_2$, $MeCH:CHMe$, $Me_2C:CH_2$, and amylenes with activated C ("AG") and birch charcoal activated with Zn-Cl were studied and the adsorption isotherms for these hydrocarbons were constructed. The dynamic activity of birch charcoal was higher than that of "AG" C. The adsorption of these hydrocarbons by each adsorbent increased with an increase in the mol. wt. About 70 95% hydrocarbons of the ethylene series were desorbed from the coal mixt. with superheated (110°) steam and CO_2. During the sorption and desorption, polymerization of hydrocarbons was not observed, although the catalytic action of C at 600° and higher was noticeably increased. A. A. Podgorny



PROCESSES AND PROPERTIES INDEX

Certain physical and chemical factors influencing the activity of charcoal. VII. N. V. Avdeyevskii and I. N. Stepanov. *J. Gen. Chem. U. S. S. R.* 9, 1577-85 (1939); cf. *C. A.* 29, 6378⁹.—Extensive expts. in activation of charcoal and several kinds of bituminous coal by extn. with various solvents are described. Charcoal was extd. with refluxing it in a solvent for 9 hrs. and drying the residue at 430°. Bituminous coals were extd. in the Soxhlet app. and in an autoclave at 225–30° and 45–50 lb. atm. for 6 hrs., followed by extn. in the Soxhlet app. and vacuum-drying at 300°. The treated and untreated C products were tested for adsorptive capacity for CH_3NO_2 vapor and for H_2S, AcOH, I, PhOH and other products in an atm. Tabulated results show that the adsorptive power of extd. charcoal is considerably increased. The most active solvents are EtOH, MeOH, CCl_4, $MeCO_2$, AcOEt, $PhNO_2$, PhNH and naphtha. The adsorptive capacity of extd. bituminous coals is increased comparatively little (up to 10%). The best solvents are $MeCO_2$, EtOH, CCl_4, CS and $C_6H_6Cl_2$. The resulting C products show poor mech. strength. Fifty references. C. B.

PROCESSES AND PROPERTIES INDEX

Catalytic transformation of dimeric 1,3-cyclohexadiene. E. V. Alekseevskii. *J. Gen. Chem.* (U. S. S. R.) 9, 1588-9(1939).—Kazanskii and Vol'fson (C. A. [illegible], 4060[illegible]) showed that dicyclohexadiene (I) is dehydrogenated over platinized charcoal at 200-5° to 1,4-endoethylenetetrahydronaphthalene, m. 63.5°. The expt. was repeated with dehydrogenation of I over reduced Pd at 150-90° by the method of Zelinskii (C. A. 17, 2565). The catalyzate gave a product, m. 62.5°, and another, m. 42-3.5°. The latter could not be obtained again. The cleavage of 2 mols. H from I could form 1,4-dimethyl-, 1-ethyl- and 1,4-endoethylenenaphthalene. In the hydrogenation of I in alc. in the presence of Pt black, it absorbed 2 mols. H to form *tetrahydrodicyclohexadiene* or *endoethylenedecahydronaphthalene*, b_6 101.9°, d_4^{20} 0.9087, $M R_D$ 50.55, exaltation 0.48. Heating I and [illegible] at 232-300° gave mixed polymers, which are easily oxidized in air at room temp. Chas. Blanc

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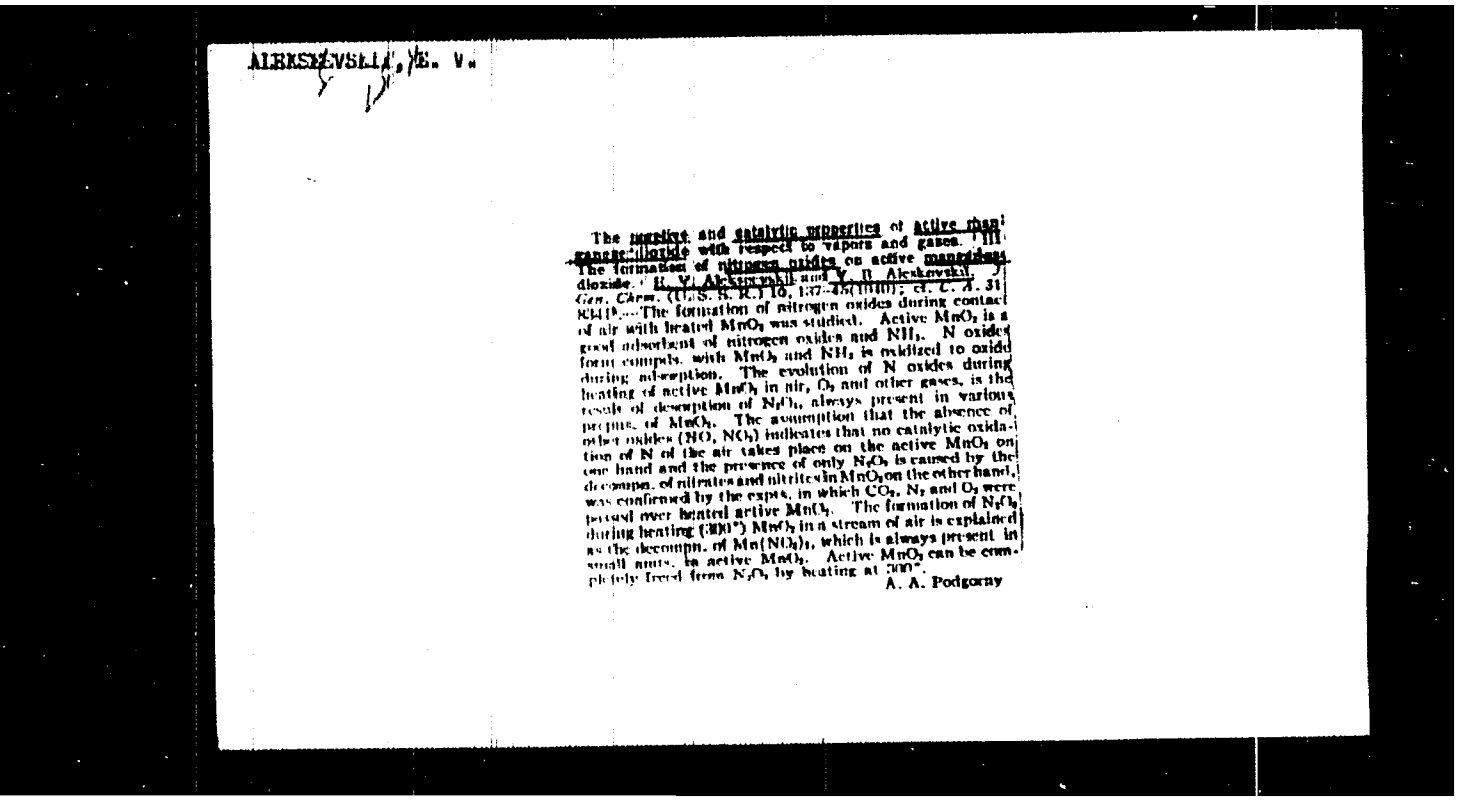
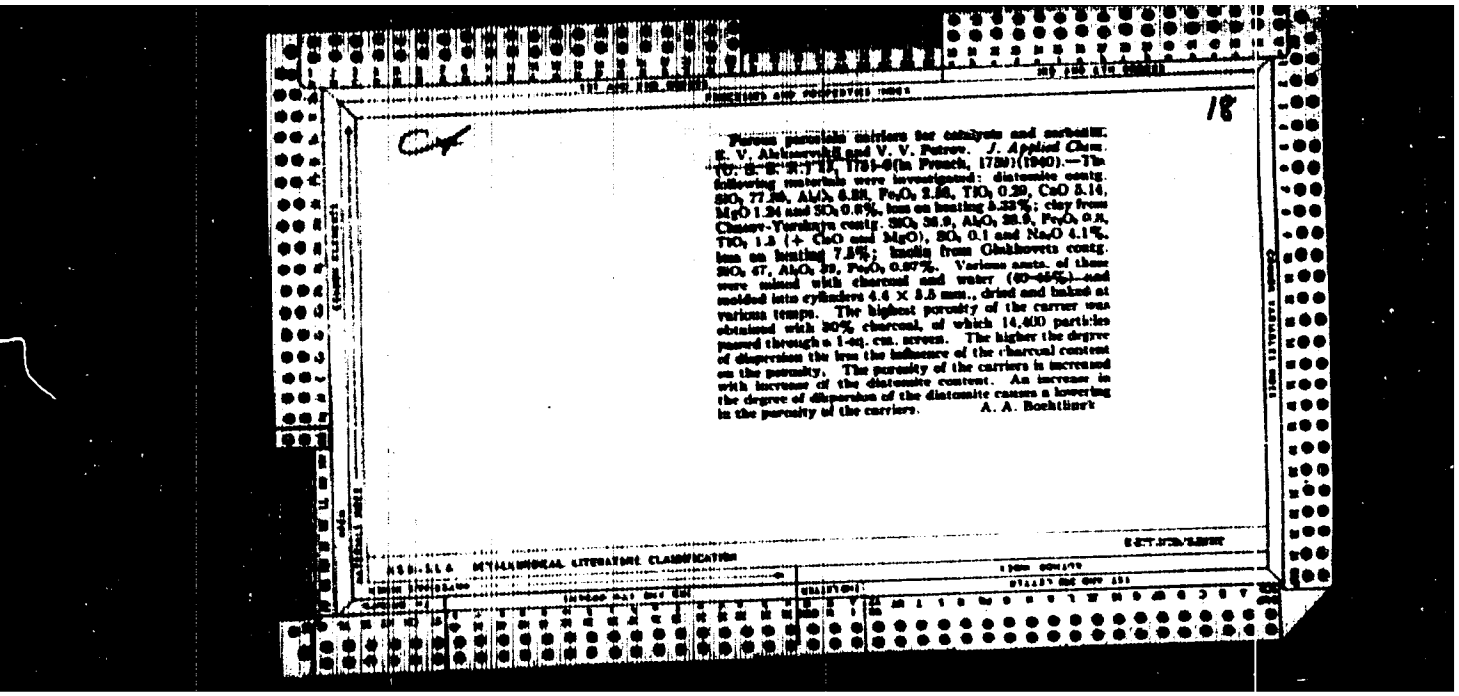


ALEKSEEVSKII, E. V.

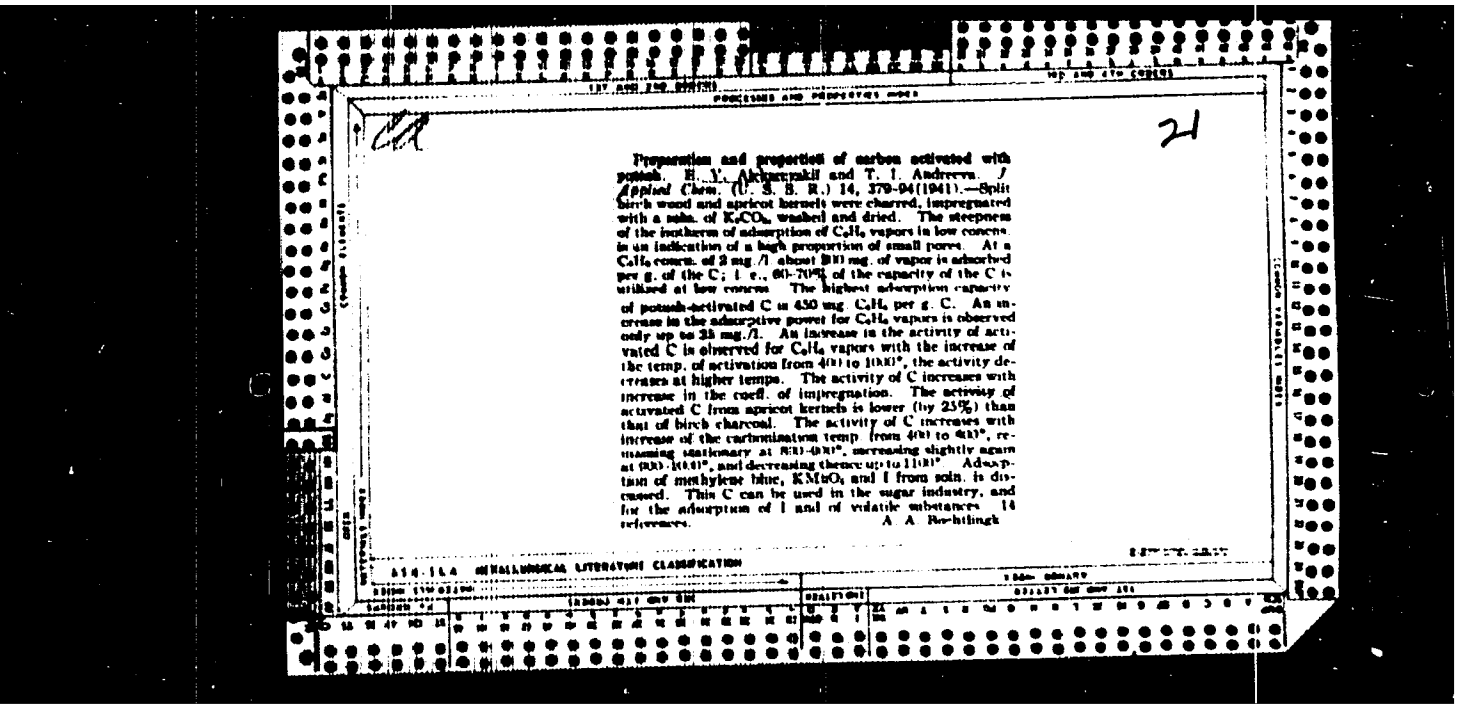
The sorptive and catalytic properties of active manganese dioxide with respect to vapors and gases. III. The formation of nitrogen oxides on active manganese dioxide. E. V. Alekseevskii and V. D. Aleskovskii. *J. Gen. Chem.* (U.S.S.R.) 16, 137–45(1946); cf. *C. A.* 31, 8311.—The formation of nitrogen oxides during contact of air with heated MnO_2 was studied. Active MnO_2 is a good adsorbent of nitrogen oxides and NH_3. N oxides form compds. with MnO_2 and NH_3 is oxidized to oxide during adsorption. The evolution of N oxides during heating of active MnO_2 in air, O_2 and other gases, is the result of desorption of N_2O_5, always present in various preps. of MnO_2. The assumption that the absence of other oxides (NO, NO_2) indicates that no catalytic oxidation of N of the air takes place on the active MnO_2 on one hand and the presence of only N_2O_5 is caused by the decompn. of nitrates and nitrites in MnO_2 on the other hand, was confirmed by the expts. in which CO_2, N_2 and O_2 were passed over heated active MnO_2. The formation of N_2O_5 during heating (300°) MnO_2 in a stream of air is explained as the decompn. of $Mn(NO_3)_2$, which is always present in small amts. in active MnO_2. Active MnO_2 can be completely freed from N_2O_5 by heating at 300°.

A. A. Podgorny

ALEKSEEVSKII, E. V.



Porous porcelain mixture for catalysts and carbamide. E. V. Alekseevskii and V. V. Petrov. *J. Applied Chem. (U.S.S.R.)* 13, 1751-9(in French, 1758)(1940).—The following materials were investigated: diatomite contg. SiO_2 77.38, Al_2O_3 6.88, Fe_2O_3 2.66, TiO_2 0.29, CaO 5.14, MgO 1.24 and SO_3 0.6%, loss on heating 5.33%; clay from Chasov-Yarskaya contg. SiO_2 58.9, Al_2O_3 28.9, Fe_2O_3 0.8, TiO_2 1.3 (+ CaO and MgO), SO_3 0.1 and Na_2O 4.1%, loss on heating 7.8%; kaolin from Glukhovets contg. SiO_2 47, Al_2O_3 39, Fe_2O_3 0.87%. Various amts. of these were mixed with charcoal and water (60–65%)—and molded into cylinders 4.4 × 5.5 mm., dried and baked at various temps. The highest porosity of the carrier was obtained with 30% charcoal, of which 14,400 particles passed through a 1-sq. cm. screen. The higher the degree of dispersion the less the influence of the charcoal content on the porosity. The porosity of the carriers is increased with increase of the diatomite content. An increase in the degree of dispersion of the diatomite causes a lowering in the porosity of the carriers. A. A. Boehtlingk



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Preparation and properties of carbon activated with potash. H. V. Alekseevskii and T. I. Andreeva. *J Applied Chem.* (U. S. S. R.) 14, 379-94(1941).—Split birch wood and apricot kernels were charred, impregnated with a soln. of K_2CO_3, washed and dried. The steepness of the isotherm of adsorption of C_6H_6 vapors in low concns. is an indication of a high proportion of small pores. At a C_6H_6 concn. of 2 mg./l about 200 mg. of vapor is adsorbed per g. of the C; i. e., 60–70% of the capacity of the C is utilized at low concns. The highest adsorption capacity of potash-activated C is 450 mg. C_6H_6 per g. C. An increase in the adsorptive power for C_6H_6 vapors is observed only up to 25 mg./l. An increase in the activity of activated C is observed for C_6H_6 vapors with the increase of the temp. of activation from 400 to 1000°, the activity decreases at higher temps. The activity of C increases with increase in the coeff. of impregnation. The activity of activated C from apricot kernels is lower (by 25%) than that of birch charcoal. The activity of C increases with increase of the carbonization temp. from 400 to 800°, remaining stationary at 800–900°, increasing slightly again at 900–1000°, and decreasing thence up to 1100°. Adsorption of methylene blue, $KMnO_4$ and I from soln. is discussed. This C can be used in the sugar industry, and for the adsorption of I and of volatile substances. 14 references.

A. A. Rochtlingk

CA 21

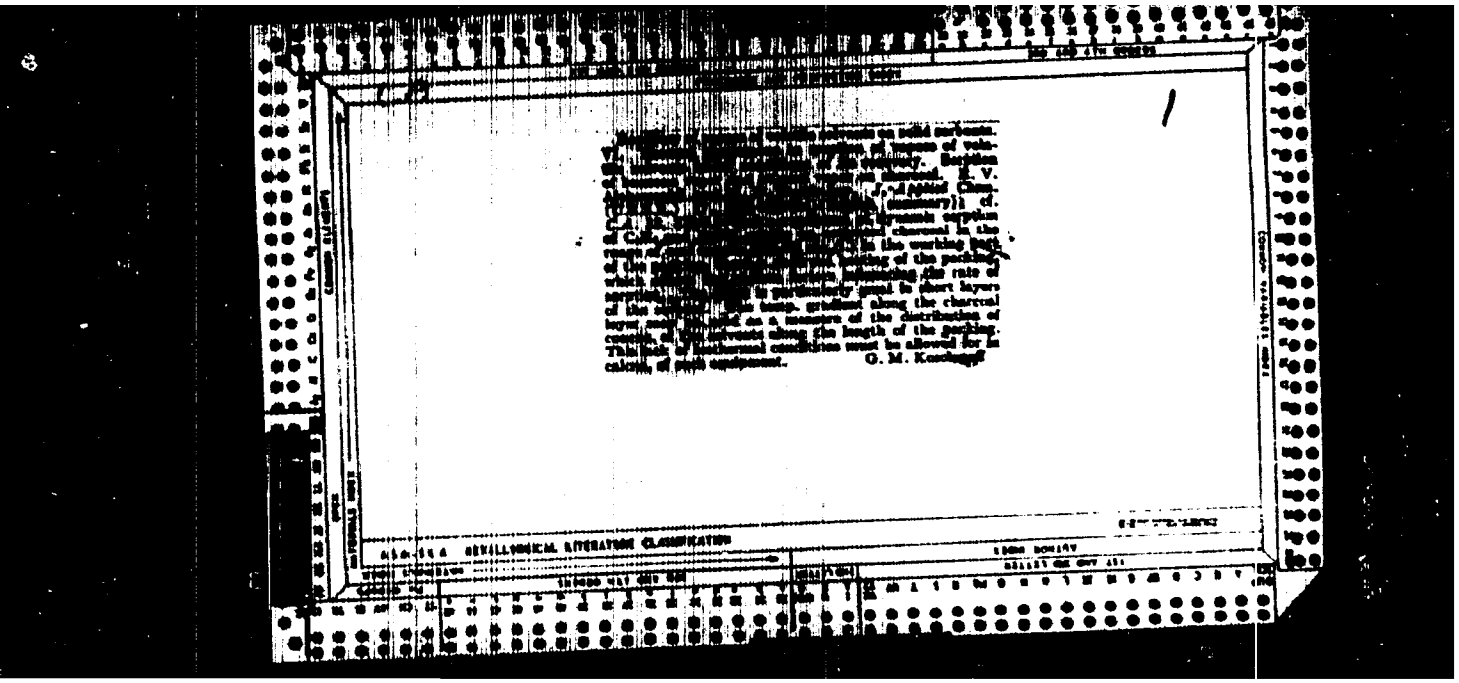
Activation of charcoal by potassium thiocyanate. [illegible] Aleksevskii and N. A. Kiruishnikova. [illegible] Applied Chem. (U.S.S.R.) 16, [illegible] (French summary); cf. C.A. 36, [illegible]. Activated charcoal was prepd. by [illegible] of pine splinters and apricot kernels with KSCN soln., followed by the carbonization step. Comparison with charcoals activated by solns. of other materials failed to show any advantage for the KSCN method. The pine splinters yield satisfactory products, while apricot kernels do not yield a product of adequate potency. In the former case the activation temp. of [illegible]° gives the most active product, which is suitable for use in the sugar industry.

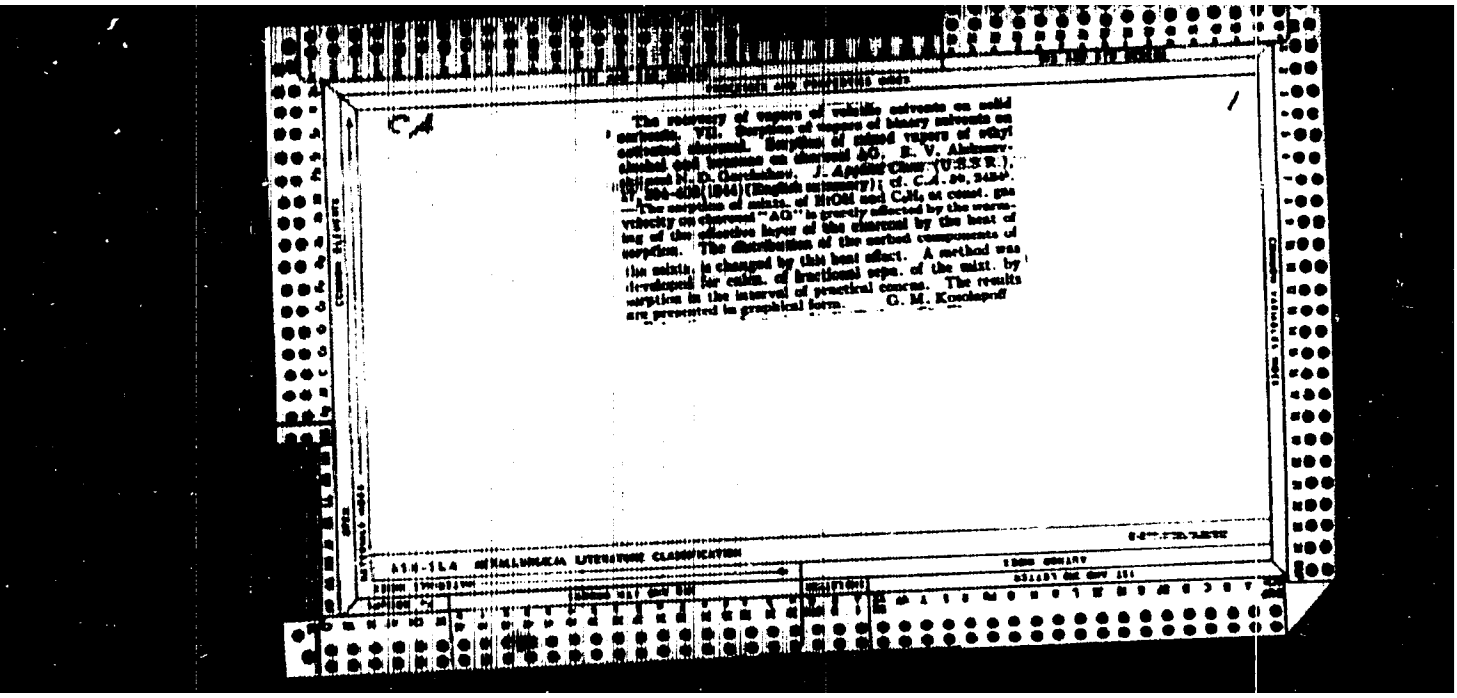
G. M. Kosolapoff

[redacted], V.

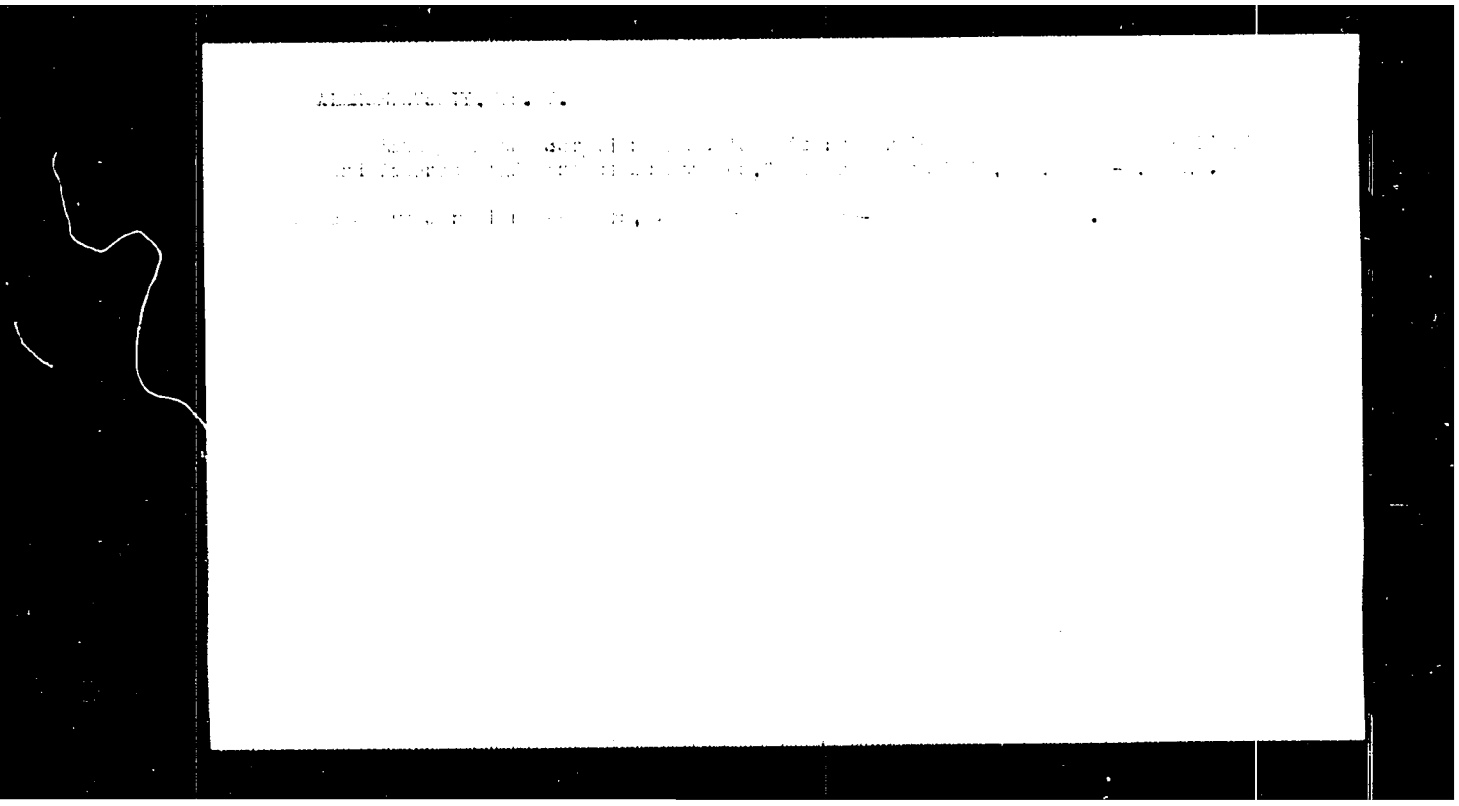
"The effect of certain chemical and physical factors upon the activity of charcoal." Alekseevskii, V. V., and Likharev, N. A. (p. 319)

SO: Journal of General Chemistry (Zhurnal Obshchei Khimii) 1942, Vol 12, No 5-6.





Volatile solvent recovery by solid adsorbents. VIII. Sorption of vapours of binary solvents on active charcoal. Desorption from charcoal of alcohol and benzene. E. V. Alyarevskii and N. P. Gertsbakov (*J. Appl. Chem. Russ.*, 1944, 17, 487–494). Desorption from 30-cm. layers of active charcoal saturated to breakthrough point by passing CCl_4 carrying vapours of 80/20 or 20/80 EtOH–C_6H_6 mixtures shows that in both cases C_6H_6 is preferably adsorbed in the forward layers, the sorption being stronger from the mixture with most C_6H_6. From the first 5 cm. of the charcoal saturated with 80/20 EtOH–C_6H_6 vapour, a liquid with 99% C_6H_6 – 1% EtOH was condensed; from the last 5 cm. pure EtOH was obtained. R. T.



CA

PROCESSES AND PROPERTIES INDEX

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The sorption and catalytic properties of active manganese dioxide toward vaporous and gaseous substances. IV. Catalytic properties of α-, β-, and γ-modifications of manganese dioxide. K. V. Alekseevskii and K. V. Frst (Lab. Sorbtsionnoi Tekhniki Leningrad. Khim.-Tekhnol. Inst.). *J. Gen. Chem.* (U.S.S.R.) 15, 3 8(1945)(English summary).—Three modifications of MnO_2 were prepd. and their x-ray patterns were compared with those obtained by Dubois (*C.A.* 30, 4430) and Glemser (*C.A.* 34, 1535). The size of crystals was smallest in α-, medium in γ-, and largest in β-modification. The amalgam-forming property (*C.A.* 29, 8349) was observed in the α-modification but not in β-. The γ-modification formed an amalgam only with difficulty. The catalytic oxidation of $PhNH_2$ into PhN:NPh proceeded effectively in the presence of the α-modification (the yield 45%), less in the presence of γ-(the yield 3%), and not at all in the presence of β-(the yield traces). The catalytic oxidation of CO was effected only in the presence of α-modification. An active MnO_2 is the α-modification of MnO_2. Cf. *C.A.* 34, 5732. A. A. Podgorny

METALLURGICAL LITERATURE CLASSIFICATION

CA 1

Recovery of vapors of volatile solvents on solid sorbents. IX. Desorption of volatile solvents from charcoal. E. V. Alekseevskii and Z. S. Vengrushina (Leningrad Chem. Tech. Inst.). *J. Applied Chem.* (U.S.S.R.) 18, 193–207(1945)(English summary); cf. *C.A.* 39, 3979. —It was shown that the desorption of solvents (EtOH and benzene) from charcoal AP by means of steam proceeds simultaneously with sorption of water vapor, the latter being a function of charcoal temp., time, the nature of the displaced solvent, and the retaining capacity of the charcoal. At higher temps. less water is adsorbed by the adsorbent, while the better is the capacity of the charcoal for the solvent and the poorer the miscibility of the solvent with water, the less intense is the sorption of water in the above displacement. Generally, the 1st 10 min. is sufficient to displace 45–80% of the adsorbed solvent. O. M. K.

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